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THE IMPLEMENTATION OF ADEQUATE STRATEGIC INFORMATION AND COMMUNICATION TECHNOLOGY FOR STUDENTS' ACADEMIC PERFORMANCE IN PUBLIC SECONDARY SCHOOLS IN RIVERS STATE.

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Abstract

The study investigated the implementation of adequate strategic information and communication technology for students' academic performance in public secondary schools in Rivers State. Three research questions guided the study and three hypotheses were tested at 0.05 significance level. A descriptive survey design was adopted. This study's population comprised 2,608 teachers in the 44 public junior secondary schools in Rivers State. A sample of 260 teachers, 52 male and 208 female teachers was drawn through a stratified sampling technique. The instrument for data collection was a self-designed instrument titled "Implementing. Strategic Information Communication Technology for Students' Academic Performance Questionnaire (ISICTSAPQ). It was made up of 15 items. The instrument was face-validated by three experts at the Ignatius Ajuru University of Education and the Reliability of the instrument was established using Cronbach Alpha method. The instrument's internal consistency yielded a reliability index of 0.77, 0.80, and 0.84 respectively for subscales and an overall reliability index of 0.82. Mean scores and standard deviation were used to answer the research questions, while z-test statistics were used to test the null hypotheses at a 0.05 significance level. The finding of this study revealed that to a high extent providing Information and Communication Technology training and resources enhances students' academic performance, and to a low extent providing Information and Communication Technology leadership.

Keywords: STRATEGIC, INFORMATION, COMMUNICATION AND ACADEMIC PERFORMANCE

Introduction

Performance is the ability to accomplish set goals and objectives. Purwadi, Darma, Febrianti, and Mirwansyah (2020) define performance as the result or overall level of success of a person during a certain period in carrying out the task compared with various possibilities. A student's academic performance is the student's ability to accomplish set educational goals and objectives after completing a subject from an institution. It is the student's performance in class work, examinations, and other measurable tasks given to the students by the teacher. A student's academic performance can be measured in terms of the total grade obtained by the student at the end of the term or completion of the subject content.

Implementing is putting a decision or plan into action or execution—strategic means relating to the most important aspect of something. Information means facts or data processed in meaningful and useable ways. Communication is the process of sharing and receiving information through various media from a sender to a receiver. Technology is a systematic application of scientific knowledge for practical purposes to solve problems. Information and Communication Technology (ICT) deals with the use of electronic computers and computer software to store, process, manipulate, transmit, receive, and securely retrieve information. Basri and Siam (2018) define information and communication technology as encompasses the amount of technical knowledge, comprising elements such as computer systems, software, and their application in educational institutions or business organizations. This means that information and communication technology consists of hardware and software, networks, and media for collection, storage processing, transmitting, and presenting information. information communication technology supports activities involving the creation, storage, manipulation, and processing of information through the use of electronic devices put together to make life easy for mankind, especially in the area of teaching and learning. Thus, implementing strategic information communication technology means executing most aspects of information communication technology.

In fact, information and communication technology emphasizes active learning promote higher student motivation than what occurs in traditional classroom settings with teacher oriented learning (Offem, Anam, & Bassey, 2023). This is also probably the most important advantages of information and communication technology use in the teaching process over the tradition teaching. In addition, the use of computers as a teaching tool allows students to learn at their own individual pace. This implies that it can be made adaptive to the individual learner, in such a way that a learner after achieving one level of knowledge can proceed to the next, which is not the case in traditional teaching.

Basic education is like the foundation of a building on which all other loads for the building come. These same foundational educations from inference determine the stability of the entire educational building that anyone can ever have. Therefore, basic education to a large extent what determines the success or failure of all other levels of education that may come after it (Amadioha et al, 2019). Thus, it becomes imperative to make this educational level functional to produce results worthy of the effort inputted by the implementers in Nigeria in conformity with global practices. The rapid development of technology over the past two decades has provided many new and creative ways for educators to present

instructional materials effectively through the use of wireless technology, and computer projection systems, and changing the nature of teaching and the organization of instructional materials through the use of information and communication technology for increased communication, resources, and lesson delivery (Nwabuwe, Nwabuwe, & Emuobonuvie, 2023). According to Basri and Siam (2018), the essential strategic elements of implementing information and communication technology (ICT) in the education system include the adoption of a learning management system, the adoption of a certain knowledge management plan, and infrastructural practices. Hence this study focused on ascertaining the extent of implementing strategic information communication technology for students' academic performance in public junior secondary schools in Rivers State.

Statement of the problem

Due to the changing globalized world, information and communication technology play a huge role in our everyday lives. It has become requisite to have technological skills in order to work and communicate with other people. The use of information and communication technology as instructional resources and other related teaching and learning activities has become necessary in the present world. Teachers are expected to be well-trained, and competent in the use of information and communication technology in the classroom and in other professional practices. They need to provide education that will grow the world economy yet; some teachers still do not have the required knowledge, skills, and right attitude to confidently and creatively integrate information and communication technology for students' academic performance.

Despite the advantages of information communication technology, there is still a low level of literacy, weak basic education standards, infrastructure scarcity, and lack of information and communication technology qualified human resources, and these seem to be obstacles to the implementation of information communication technology in public junior secondary schools in Rivers state. The use of information communication technology can go a long way in addressing so many challenges of students' academic performance especially in this era of technology where digital technology is the order of the day. Therefore, the question here is, can implementing strategic information communication technology enhance students' academic performance in public junior secondary schools in Rivers State.

Aim and Objectives of the Study

The aim of this study was to investigate the extent of implementing strategic information communication technology enhance students' academic performance in public junior secondary schools in Rivers State. Specifically, the objectives of the study sought to:

1. Examine the extent providing Information and Communication Technology training enhance students' academic performance in public junior secondary schools in Rivers State
2. Ascertain the extent providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State
3. Investigate the extent providing Information and Communication Technology leadership enhance students' academic performance in public junior secondary schools in Rivers State

Research Questions

The following research questions were formulated to guide the study:

1. To what extent does providing Information and Communication Technology training enhance students' academic performance in public junior secondary schools in Rivers State
2. To what extent do providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State
3. To what extent does providing Information and Communication Technology leadership enhance students' academic performance in public junior secondary schools in Rivers State

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance:

1. There is no significant difference between the mean ratings of male and female teachers on the providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State
2. There is no significant difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State
3. There is no significant difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State

Theoretical Framework

The theoretical foundation of this study is based on the Connectivism theory propounded by Siemens and Downes (2005).

George and Downes (2005) Theory of Connectivism

Connectivism theory propounded by George Siemens and Stephen Downes (2005) holds that learning occurs when knowledge is actuated through the process of a learner connecting to feeding information into a learning community. Siemens and Downes discussed their ideas connecting distributed knowledge in a separate work. Siemens worked on "Connectivism: Learning as Network Creation" while Downes worked on "An Introduction to Connective Knowledge" which gained attention in their blogs and websites in 2005.

Siemens was an Associate Director of the Learning Technologies Centre at the University of Manitoba. He has worked with learners and employees in global business and educational environments. Downes worked in the areas of online learning content syndication and new media for the National Research Council, Institute of Information and Technology in Moncton, New Brunswick, Canada. He studied connective knowledge that he characterizes as an interactive, knowledge connection within a network. Both are exponents of the openness and interpretive nature of knowledge and the connectedness of learning online, and model connected

online learning knowledge sharing through their blogs and websites.

Siemens (2005) stated that a community is the clustering of similar areas of interest that allows for interaction, sharing, and thinking together. He viewed connectivism as a learning theory for the digital age, a successor to behaviorism, cognitivism, and constructivism to address the learning that is located within technology and organizations, and their lack of contribution to the value judgments that need to be made in knowledge-rich environments. The concept of network is emphasized, which characterizes knowledge as a flow through a network of human and non-human elements.

A network comprises connections between entities (nodes), where the nodes can be individuals, groups, systems, fields, ideas, resources, or communities (Bell, 2009). In addition, he described Siemens' and Downes' ideas as a bold research agenda around the sharing of cognitive tasks between people and technology coping with rapid change in the information ecology and the impact of theories of networks, complexity, and chaos. Downes (2005), if learning transpires via connections to nodes on the network, then it follows that the maximization of learning can best be achieved through identifying the properties of effective networks. Siemens established a set of principles for Connectivism. The principles of Connectivism:

1. Learning and knowledge rest in the diversity of opinions
2. Learning is a process of connecting specialized needs or information sources
3. Learning may reside in non-human appliances
4. The capacity to know more is more critical than what is currently known
5. Nurturing and maintaining connections is needed to facilitate continual learning
6. The ability to see connections between fields, ideas, and concepts is a core skill
7. Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities
8. Decision-making is a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision.

Relating the theory to the study, the theory emphasizes the ability to make decisions based on information that has been acquired as an integral to the learning process. It addresses the challenges that many corporations face in knowledge management activities. This indicated that knowledge residing in the database needs to be connected with the right people in the context to be classified as learning. The theory viewed learning as a process of creating connections, and nodes and sharing knowledge using information and communication technology. Hence, it encourages Information and Communication Technology to a very high extent, as a means to enhance student's academic performance within and outside the classroom.

Conceptual Review

Providing Information and Communication Technology Training

The role of the government and educational managers is training, as this plays a significant role in the implementation of information and communication technology. Akpan and Ita (2015) state that

information and communication technology training enhances teacher's knowledge to search for quality materials on the Internet for lesson preparation and improvement of teaching and learning in schools. This improves the efficiency of the educational processes and enhances students' academic performance. Qasem and Viswanathappa (2016) revealed that the integration of technology training of facilitators who be able to combine text, video, image, and animation with visual effects can facilitate the learning process and enhance students' academic performance.

Providing Information and Communication Technology Resources

Another role of the government and educational managers in information and communication technology implementation is that of the provision of resources, which includes both human and financial resources and information and communication technology tools needed at the school level. In a situation where there are available information and communication technology resources with financial resources, but without the human resources (skills or knowledge of teachers) to implement information and communication technology in the classroom is unlikely to bring positive outcomes. Information and communication technology resources such as laptops, computers, tablets, personal digital assistants, interactive whiteboards, smartphones, digital cameras, iPods, and computers among others. Sponte, Hashemi, Lundin, and Algers (2018) assert that information and communication technology devices consist of physical equipment that is used for processing information in various ways such as basic mobile phones, smartphones, e-readers, interactive whiteboards, netbooks, tablets, iPads, and computers. These resources facilitate effective teaching and learning in schools to achieve academic performance (Oladipo & Adekunle, 2016). They enable students and teachers to control their learning and allow learners to switch learning contexts. It is evidence that digital devices have brought innovation to the classroom. Teachers can use digital technology to create interactive presentations and improve the education system.

Providing Information and Communication Technology leadership

The school principal, who can be regarded as the driver of information and communication technology implementation at the institutional level, should create and demonstrate a clear vision of the change, notably indicating the advantages of information and communication technology implementation. The role of school principals as technological leaders' ranges from setting school vision aligned to technology use to enhancing classroom teaching and learning in the school. Principals as digital leaders in the 21st century need to create a conducive school culture that supports the use of ICT and use it in every aspect of school organizations (Gyeltshen, 2020). School leaders offer guidance and management in the digital era to continuously develop schools, further making good use of information and communications technology to facilitate teaching and learning in the school (International Society for Technology in Education, 2014). This means that an important role of school leaders in the implementation of information and communications technology is to provide every kind of support possible in the effective use of available resources to enhance students' academic performance.

Review of Related Empirical Studies

Offem, Anam, and Basse (2023) investigated planning and management as integrated approaches to teaching and learning in universal basic education through information and communication

technology in connecting theory to practice in a digital age. The aim of the study was to examine the approaches to learning in universal basic education in promoting the use of modern information and communication technology in school programmes and activities also the approaches adopted by head teachers and teachers to integrate the new technology in instructional delivery. The study descriptive survey was adopted. Three research questions guided the study. The population of the study comprised 5,025 respondents made up of 251 head teachers and 4,874 teachers in the Calabar, Ikom, and Ogoja education zones. Sample size of 968 respondents made up of eight (88) head teachers and 880 teachers were selected from the population of the study. A self-design questionnaire was used to gather data for the study. The questionnaire was validated by experts and the reliability of the instrument was 0.88 using Cronbach alpha method. The study revealed low head teachers integrated approaches to learning in Universal Basic Education promoting information and communication technology, and majority of head teachers is not competent in the application of basic computer software hence they are unable to exploit the numerous benefits that abound in the use of Information and communication technology in school. The study recommended among others that adoption and application of information and communication technology can be achieved based on recognition of the numerous benefits of integrating it in school programmes and classroom.

Wordu, Ugbari, and Duba (2023) investigated the role of Information and Communication Technology on the quality management of the Universal Basic Education (UBE) program in Rivers State. The design used for the study is a descriptive survey. The population of the study was 40 administrative staff of the Universal Basic Education program, which included 15 school principals in public junior secondary schools. The census sampling technique was used since the population was manageable. The instrument for data collection was a structured questionnaire constructed by the researchers. The structure followed the four-point Likert rating scale type. The questionnaire was validated by experts and the reliability of the instrument was 0.82 using the Cronbach alpha method. Data collected were analyzed using mean and standard deviation to answer the research questions. The study revealed that Information and Communication Technology was applied for effective quality management of the universal basic education program in Rivers State. The findings of the study revealed that to a high extent staff of the program were equipped with Information and Communication Technology literacy skills for effective management of the universal basic education program in Rivers State. Based on the findings of the study, it was recommended among others that the program management should be provided with more Information and Communication Technology tools for quality program planning and management, especially in the area of program supervision and evaluation. It was also recommended that more opportunities should be provided for Information and Communication Technology skills in the areas of Web design, Computer networking, Video conferencing, use of Digital cameras, knowledge of Copyright laws, and, Cyber security.

Michael and Igenewari (2022) investigated the availability and utilization of Information and Communication Technology facilities for the implementation of computer studies curriculum in Universal Basic Education schools in Rivers State. The study evaluates the availability and utilization of Information and Communication Technology facilities for the implementation of

the Computer Studies Curriculum for Universal Basic Education schools in Rivers State. A descriptive survey research design was adopted in this study. This study was carried out in the Rivers-West education zone of Rivers State. The population for the study comprised 312 primary school heads and 1244 class teachers in the state-owned primary schools zone. The instrument used for data collection was a structural questionnaire. Two research questions and two null hypotheses were formulated to guide this study. The data collected were analyzed using mean and Standard Deviation (SD) in answering the research questions, while a t-test was used to test the hypotheses at a 0.05 level of significance. The findings of the study revealed that information and communication technology facilities for the implementation of computer studies curriculum are available in schools, and information and communication technology facilities were inadequate and under-utilized for the implementation of Computer Studies Curriculum. The study recommends that competent and qualified computer studies teachers and Information Technology personnel should be engaged and retrained regularly in Universal Basic Education schools, and Rivers State Government through the Ministry of Education should provide the recommended information and communication technology facilities to ensure the effective implementation of Computer Studies Curriculum at the Universal Basic Education schools.

Methodology

Research Design

The study adopted a descriptive survey design. This design was appropriate because the researcher seeks to collect data from the representative of the population on the extent of implementing strategic information communication technology for students' academic performance and describe their responses without manipulation of variables.

Population of the Study

The population of the study comprised 2,608 teachers (527 male and 2,081 female teachers) in the 44 public junior secondary schools in Rivers State (Source: Rivers State Universal Basic Education Board, Planning, Research and Statistics, 2021).

Sample and Sampling Technique

The sample of 30 junior secondary schools in Rivers State Rivers State was drawn from the population of the schools representing 68% of the entire population of the study. The sample size comprised 260 teachers (52 male and 208 female teachers) representing 10% of the entire population of the study. The sample was drawn using a proportionate stratified random sampling technique.

Instrument for Data Collection:

The instrument for data collection was developed with the title "Implementing Strategic Information Communication Technology for Students' Academic Performance Questionnaire (ISICTSAPQ). The instrument ISICTSAPQ comprised two sections; Section A consists sought personal data of the respondents such as the status of the respondents. Section B consists 15-item structured in a 4-

point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE), and their scale was rated as follows; VHE = 4 points, HE = 3 points, LE = 2 points and VLE = 1 point respectively. The sub-sections were; Information and Communication Technology training (5 items), Information and Communication Technology resources (5 items), and Information and Communication Technology leadership (5 items).

Validation of the Instrument:

The instrument was validated by the researcher's supervisor and two other experts from the Educational Management and Educational Guidance and Psychology, at Ignatius Ajuru University. The comments from the supervisor and two other experts were incorporated into the final drafts of the instrument before it was used for data collection.

Reliability of the Instrument:

The reliability of the instrument was ascertained using the Cronbach Alpha method. Thirty copies of the instrument were administered to 30 teachers in public junior secondary schools in Rivers State outside the study samples. To determine the internal consistency of the instrument, the data collected was coded in Statistical Package for Social Sciences (SPSS) version 25. The Cronbach Alpha statistics obtained a reliability index for Information and Communication Technology training, Information and Communication Technology resources, and Information and Communication Technology leadership as 0.77, 0.80, and 0.84 respectively for subscales and the overall reliability index of 0.82 which was reliable to the study.

Method of Data Collection

Two hundred and sixty (260) copies of the instrument were distributed to the respondents with the help of three (3) Research Assistants who were trained on the modality of administering the instrument. Out of 260 copies of the instrument distributed, 256 were correctly filled, which represented 98.46% of the instrument distributed and used for data analysis.

Method of Data Analysis

Mean scores and standard deviation was used in answering research questions, while z-test was used to test the null hypotheses at 0.05 level of significance. The researcher adopted a criterion mean of 2.50 and above as agreed, while below 2.50 as disagreed based on the four-point rating scale. The null hypotheses were accepted when the z-calculated value was less than the z-critical value and otherwise rejected.

Results and Discussion

Research Question 1: To what extent does providing Information and Communication Technology training enhance students' academic performance in public junior secondary schools in Rivers State?

Prepare lesson plans using computer applications

Table 1: Mean ratings and standard deviation of male and female teachers on the providing Information and Communication Technology training enhance students' academic performance in public junior secondary schools in Rivers State.

S/N	Extent providing Information and Communication Technology training	Male (n = 50)			Female (n = 206)		
		\bar{x}	S.D	Remark	\bar{x}	S.D	Remark

1.	trained on the pedagogy use of computer aided instructional tools trained on the pedagogy use of computer aided instructional tools Prepare lesson plans using computer applications Teachers receive training on how to prepare lesson plans using ICT devices as a means of enhancing students' academic performance	2.81	0.71	High Extent	2.86	0.78	High Extent
2.	Teachers receive training on how to use ICT applications to prepare lessons for students as a means of enhancing students' academic performance	2.95	1.06	High Extent	2.92	0.82	High Extent
3.	Teachers receive training on how asses students using ICT devices as a means of enhancing students' academic performance	2.63	0.84	High Extent	2.82	0.92	High Extent
4.	Teachers receive training on how to search materials using ICT devices as a means of enhancing students' academic performance	2.86	0.89	High Extent	2.74	0.97	High Extent
5.	Teachers receive training on how to use ICT devices in lesson delivery in the classroom as a means of enhancing students' academic performance	2.90	0.98	High Extent	2.72	0.69	High Extent
Average Mean/Standard Deviation		2.83	0.94	High Extent	2.81	0.88	High Extent

Source: Survey Data 2023

Table 1 shows the mean ratings and standard deviation of male and female teachers on the extent providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State The Table shows that the respondents jointly indicate a high extent to items 1, 2, 3, 4, and 5 with the mean score above the criterion mean of 2.50, The average mean of 2.83 and 2.81 for male and female teachers respectively are above the criterion mean of 2.50 indicating high extent.

Research Question 2: To what extent does providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State?

Table 2: Mean ratings and standard deviation of male and female teachers on providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State.

S/N	Extent of providing Information and Communication Technology resources	Male (n = 50)			Female (n = 206)		
		\bar{x}	S.D	Remark	\bar{x}	S.D	Remark
6.	There are whiteboards in the classroom as a means of enhancing students' academic performance	2.31	0.81	Low Extent	2.36	0.88	Low Extent
7.	There is internet connectivity in the school environment as a means of enhancing students' academic performance	3.04	0.94	Very High Extent	3.14	0.96	Very High Extent
8.	There are computers for learning as a means of enhancing students' academic performance	3.05	0.97	Very High Extent	3.08	0.81	Very High Extent
9.	There are audio/video equipment for learning as a means of enhancing students' academic performance	2.58	1.19	Low Extent	2.61	1.06	Low Extent
10.	There are projection systems for learning as a means of enhancing students' academic performance	2.13	1.00	Low Extent	2.11	0.97	Low Extent

Source: Survey Data 2023

Table 2 shows the mean ratings and standard deviation of male and female teachers on extent providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State. The Table shows that the respondents jointly indicate a very high extent to items 7 and 8 with the mean score above the criterion mean of 2.50, while the respondents jointly indicate a low extent to items 6, 9, and 10. The average mean of 2.62 and 2.66 for male and female teachers respectively are above the criterion mean of 2.50 indicating a high extent.

Research Question 3: To what extent does providing Information and Communication Technology leadership enhance students' academic performance in public junior secondary schools in Rivers State?

Table 3: Mean ratings and standard deviation of male and female teachers on the extent providing Information and Communication Technology leadership enhances students' academic performance in public junior secondary schools in Rivers State.

S/N	Extent of providing Information and Communication Technology leadership	Male (n = 50)			Female (n = 206)		
		\bar{x}	S.D	Remark	\bar{x}	S.D	Remark
11.	School leaders inspire a shared vision for inclusive incorporation of ICT as a means to enhance students' academic performance	2.41	0.91	Low Extent	2.36	1.11	Low Extent
12.	School leaders create a favorable school environment for the implementation of ICT as a means to enhance students' academic performance	2.14	0.94	Low Extent	1.24	0.96	Low Extent
13.	School leaders integrate appropriate ICT to maximize learning and teaching as a means to enhance students' academic performance	2.25	1.07	Low Extent	1.38	0.81	Low Extent
14.	School leaders use of ICT to plan for effective assessment and evaluation as a means to enhance students' academic performance	2.28	1.02	Low Extent	1.21	0.96	Low Extent
15.	School leaders offer guidance for the continuous development of ICT leadership school as a means to enhance students' academic performance	2.81	0.84	High Extent	2.69	0.88	High Extent
Average Mean/Standard Deviation		2.37	0.96	Low Extent	1.77	0.94	Low Extent

Table 3 shows the mean ratings and standard deviation of male and female teachers on the extent to which providing Information and Communication Technology leadership enhances students' academic performance in public junior secondary schools in Rivers State. The Table shows that the respondents jointly indicate a high extent to item 15 with a mean score above the criterion mean of 2.50, while the respondents jointly indicate a low extent to items 11, 12, 13, and 14. The average mean of 2.37 and 1.77 for male and female teachers respectively are above the criterion mean of 2.50 indicating low extent.

Test of Hypotheses

Hypothesis 1: There is no significant difference between the mean ratings of male and female teachers on the providing Information and Communication Technology training to enhance students' academic performance in public junior secondary schools in Rivers State

Table 3: Summary of z-test analysis of the mean ratings of male and female teachers on the providing Information and Communication Technology training enhance students' academic performance in public junior secondary schools in Rivers State.

Teachers	n	\bar{x}	S.D	df	$z_{cal.}$	$z_{crit.}$	Decision
Male	50	2.83	0.94	2			
				254	0.13	± 1.96	H_{01} Accepted
Female	206	2.81	0.88				
Total	256			256			

Level of significance = 0.05

Data in Table 1 shows the summary of the subject's mean, standard deviation and z-test of difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State. The calculated z-value used in testing the hypothesis stood at 0.13, the z-critical value stood at ± 1.96 using 254 degrees of freedom. At 0.05 level of significance and 654 degrees of freedom, the calculated z-test of 0.13 was less than the z-critical value of ± 1.96 . Based on this, the researcher failed to reject the null hypothesis and confirmed that there was no significant difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State.

Hypothesis 2: There is no significant difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State.

Table 3: Summary of z-test analysis of the mean ratings of male and female teachers on the extent providing Information and Communication Technology resources enhances students' academic performance in public junior secondary schools in Rivers State Rivers State

Teachers	n	\bar{x}	S.D	df	z-cal.	z-crit.	Decision
Male	50	2.62	0.97	2			
				254	-0.26	± 1.96	H ₀₁ Accepted
Female	206	2.66	0.93				
Total	256			256			

Level of significance = 0.05

Data in Table 2 shows the summary of the subject mean, standard deviation and z-test of the difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology resources enhances students' academic performance in public junior secondary schools in Rivers State. The calculated z-value used in testing the hypothesis stood at -0.26, the z-critical value stood at ± 1.96 using 254 degrees of freedom. At 0.05 level of significance and 654 degrees of freedom, the calculated z-test of -0.26 was less than the z-critical value of ± 1.96 . Based on this, the researcher failed to reject the null hypothesis and confirmed that there was no significant difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology resources enhances students' academic performance in public junior secondary schools in Rivers State.

Hypothesis 3: There is no significant difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology leadership enhances students' academic performance in public junior secondary schools in Rivers State.

Table 3: Summary of z-test analysis of the mean ratings of male and female teachers, on the extent to which providing Information and Communication Technology leadership enhances students' academic performance in public junior secondary schools in Rivers State.

Teachers	n	\bar{x}	S.D	df	z-cal.	z-crit.	Decision
Male	50	2.37	0.96	2			
				254	3.98	± 1.96	H ₀₁ Rejected
Female	206	1.77	0.94				
Total	256			256			

Level of significance = 0.05

Data in Table 3 shows the summary of the subject's mean, standard deviation and z-test of the difference between the mean ratings of male and female teachers on the extent to which providing Information and Communication Technology leadership enhances students' academic performance in public junior secondary schools in Rivers State. The calculated z-value used in testing the hypothesis stood at 3.98, while the z-critical value stood at ± 1.96 using 254 degrees of freedom. At 0.05 level of significance and 654 degrees of freedom, the calculated z-test of 3.98 was greater than the z-critical value of ± 1.96 . Based on the foregoing, the researcher rejected the null hypothesis and confirmed that there was a significant difference between the mean ratings of male and female teachers on the extent providing Information and Communication Technology leadership enhances students'

academic performance in public junior secondary schools in Rivers State.

Discussion of Findings

The findings revealed that to a high extent providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State. This means that training is provided to teachers for implementing strategic Information and Communication Technology training for students' academic performance in public junior secondary schools in Rivers State. This is in line with Wordu, Ugbari, and Duba (2023) revealed that to a high extent staff of the program were equipped with Information and Communication Technology literacy skills for effective

management of the universal basic education program in Rivers State. The hypothesis revealed that there was no significant difference between the mean ratings of male and female teachers on the extent providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State

The findings revealed that to a high extent providing Information and Communication Technology resources enhance students' academic performance in public junior secondary schools in Rivers State This means that resources are provided to teachers for implementing strategic Information and Communication Technology training for students' academic performance in public junior secondary schools in Rivers State This is in line with Michael and Igenewari (2022) revealed that information and communication technology facilities for the implementation of computer studies curriculum are available in schools, information, and communication technology facilities were inadequate and under-utilized for the implementation of Computer Studies Curriculum. The hypothesis revealed that there was no significant difference between the mean ratings of male and female teachers on the extent providing Information and Communication Technology resources enhances students' academic performance in public junior secondary schools in Rivers State

The findings revealed that to a low extent providing Information and Communication Technology training enhances students' academic performance in public junior secondary schools in Rivers State This means that leadership is not adequate to teachers for implementing strategic Information and Communication Technology training for students' academic performance in public junior secondary schools in Rivers State This is in line with Offem, Anam, and Bassey (2023) revealed low head teachers integrated approaches to learning in Universal Basic Education promoting information and communication technology, and the majority of head teachers are not competent in the application of basic computer software hence they are unable to exploit the numerous benefits that abound in the use of Information and communication technology in school. The hypothesis revealed that there was no significant difference between the mean ratings of male and female teachers on the extent providing Information and Communication Technology leadership enhances students' academic performance in public junior secondary schools in Rivers State.

Conclusion

The place of Information and Communication Technology cannot be over-emphasized. Implementing strategic Information and Communication Technology in training, provision of resources, and leadership will go a long way to enhance students' academic performance in Rivers State, Nigeria.

Recommendations

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

1. Rivers State Government through the Ministry of Education should regularly organize teachers' training and retraining programmes such as conferences, workshop and seminar in conjunction with professionals in Information and Communication Technology.
2. Rivers State Government through the Ministry of Education should provide the recommended ICT

resources to ensure effective implementation of ICT in order to enhance students' academic performance.

3. School managers should ensure that they provide leadership and support for teachers implementing Information and Communication Technology in the classroom in order to enhance students' academic performance.

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