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Management Of E-Teaching Tools For Effective Instructional Delivery In Public Senior Secondary Schools In Rivers State

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ABSTRACT
The study aimed to examine the management of e-teaching tools for effective instructional delivery in public senior secondary schools in Rivers State. Three research questions and three null hypotheses were raised to guide the study. The descriptive survey design method was adopted. The population of this study consisted of 6,485 teaching and management staff (311 principals and 6,174 teachers) in all three hundred eleven (311) public senior secondary schools in the 23 Local Government Areas of Rivers State, the sample size for this study was 340 respondents, consisting of 280 teachers and 60 principals drawn from the entire population The proportionate stratified sampling technique was used. The instrument that was used for the collection of data in this study was a questionnaire. The questionnaire was titled Management of E-Teaching Tools for Effective Instructional Delivery Questionnaire. The face and content validities of the instrument were determined by three experts. The reliability co-efficient was calculated to be 0.82 while the reliability co-efficient of each variable were 0.80, 0.84, and 0.79 which showed that the instruments were high and very reliable. 377 copies of the instruments were administered, and 340 were retrieved the research questions for this study were answered using mean and standard deviation, while the hypotheses were tested at a 0.05 level of significance using a z-test. Based on the findings of the study, it was concluded that the management of e-teaching tools for effective instructional delivery in public senior secondary schools in Rivers State includes WhatsApp messages, computers, and electronic books, and it was recommended that Principals must always ensure that WhatsApp messages are used regularly for the delivery of instruction in schools. They should encourage teachers to use it to send assignments and information to students, and Principals should encourage teachers to record audio messages and send them to students. They should also ensure adequate provision of recording devices.
Keywords: Management**,** E-teaching tools, effective instructional delivery, secondary schools, and Rivers State.

INTRODUCTION

The purpose of education is to instruct the inhabitants of a country and ensure they are valuable to both themselves and their community. It plays a crucial role in a nation's progress by contributing to its economy and society. Education imparts knowledge and skills to the populace and molds the character of the young generation. Education significantly influences an individual's success in life and can greatly impact their overall quality of life. It is widely regarded as the cornerstone of society, fostering economic prosperity, social well-being, and political steadiness. The teacher's efforts to create a productive and engaging learning experience for students involve various elements such as content delivery, teaching methods, student interaction, available resources, and assessment. This collective effort is known as instructional delivery. It involves the teacher effectively utilizing their

training, knowledge, and skills to influence the student's behavior and learning process. For successful teaching and learning to take place, students need to comprehend the content and demonstrate their understanding in assessments like tests and assignments. The methods and strategies employed by teachers in the classroom play a crucial role in effective lesson delivery and instruction. The ultimate aim of the teaching process is to facilitate learning, which is achieved through effective.

The primary goal of instructional delivery is to ensure that educators have the skills and knowledge necessary to provide students with effective instruction. Instructional delivery must be based on the stated objectives of the lesson and should incorporate technology and different teaching methods to facilitate change in learner behavior. Effective instructional delivery embraces all human interactive skills employed by the teacher to promote/facilitate learning in the classroom situation thereby leading to improved performance on the part of the learner. It is a process in which teachers apply a repertoire of instructional strategies to communicate and interact with the learners around academic content, and to support student engagement for better learning outcomes. The use of technology in the teaching and delivery of lessons has been of immense help to students. Using ICT-related tools and equipment has seen a huge change from what used to be obtainable in schools.

WhatsApp Messages for Effective Instructional Delivery

With their increasing time, scope, and frequency of use, WhatsApp technologies have started to shape the way people form and share content and their way of communication. The use of WhatsApp platforms is very popular among young people and has become prevalent due to their nature to meet the needs of individuals towards socialization. WhatsApp platform provides teachers medium to communicate with their learners when they cannot meet face to face, has potential to provide cooperation, increase social interaction, interest and motivation, sense of belonging, academic success, student-student and student-teacher interaction, support learning anytime and anywhere, provide peer support, feedback, and allow for sharing of information in education Apart from the studies underlining the positive aspects of using them in education, depending on their purpose and form of use, concerns towards privacy and security, losing attention, getting beyond the limits in personal relations, use of slang language, and negative effects on academic life arising from excessive use, have also been determined in the results of the studies.

The presence of positive and negative sides of social networks does not change the fact that these tools are rapidly becoming popular, gaining an important place in our lives, and starting to take their place in education. Though there are a lot of instant messaging applications that can operate on mobile devices, it is seen that WhatsApp application is one of the most favored mobile-based applications for fast and reliable online transmission of data. In their study, Church and de Oliveira (2013) emphasize this fact and state that WhatsApp has grown in popularity due to its benefits such as being able to send real-time messages to an individual or groups of friends and learners simultaneously, low cost, and privacy.

However, in studies on the use of different instant messaging platforms in education, it is also determined that these applications have the potential to learners be active in their studies, interaction between students on personal, school, and course-related topics creates a sense of belonging, eliminate social barriers and increase learners' motivation. With the help of these benefits, which are also supported by the studies conducted on WhatsApp (Bouhnik & Deshen, 2014), it is noted that the application can be a useful tool within the scope of learning anytime and anywhere and collaborative learning. The potential of social networks when designed by the needs of science and information is alleged to cause revolutionary changes (Zaidieh, 2012), and their influence on the educational environment is increasing rapidly every day, especially with the help of internet-supported mobile technologies. This potential, which enables cooperative synchronous and asynchronous communication together with multimedia support, and covers the features of social networks on a large scale, should not be disregarded.

Recently, instant messaging has become a top priority and is popular among students (Cetinkaya & Sütçü, 2016). However, there is evidence that these applications have a significant effect on the social development of young people, which necessitates an examination of their impact on academic development and expectations. Plana (2013) also found that the use of instant messaging applications like WhatsApp increases students' motivation and willingness to study in immersion programs. Another important factor that influences students' willingness for similar implementation in their other

courses is the realization of learning. In his study, Smit (2012) stated that WhatsApp and other instant messaging applications have the potential to increase learning. The study also highlights students' statements that learning can take place unconsciously as well as consciously.

Recorded Audio for Effective Instructional Delivery

The use of recorded audio in education involves integrating various resources to transmit knowledge and information between people. It aims to appeal to the senses of hearing and seeing. Recorded audio includes the use of audio-visual materials to educate learners who are unable to access formal education. It extends education to those who cannot attend classes in person, such as through correspondence courses, using audio resources as the main medium of instruction in distance learning (Eje, 2016). Recorded lectures provide alternative instructional methods that can create more engaging content. The use of recorded audio lectures increased during the COVID-19 pandemic, which led to the shutdown of classrooms worldwide (Kurzweil, 2020). Recorded audio is teaching and learning materials that appeal to the sense of hearing. This recorded audio transmits the human voice and other sounds for teaching and learning. The teacher's voice is the most important audio resource for instructional delivery. Therefore, effective teaching and learning in the realization of educational goals and objectives depends to a large extent on the teacher's ability to use his voice to effectively communicate with the learner. Recorded audio can be accessed through radio, recorded player, global system for mobile communication, earpiece, and the compact disc.

Ethnographic and linguistic research on naturally occurring talk has always had to contend with important technical and methodological challenges: capturing the speech of speakers on the move and in various contexts; choosing among recorder options; ensuring audio quality; faithfully recording phonological and prosodic subtleties; addressing observer effects; and working with limited resources. There certainly are resources to help researchers decide what recording equipment to use (Plichta 2010).

Innovations in audio recording technology are expanding what researchers can imagine as possible, pushing methodological and theoretical boundaries. At the same time, there is greater awareness and acceptance of life exposure among would-be research informants. Reality television, the mainstream success of documentary films, and Web 2.0 technologies in which users display various aspects of their personal lives for public viewing have made it less threatening, and, indeed, desirable to expose mundane aspects of private lives. Sound quality is crucial, but versatility is an important consideration. Both are interrelated.

Versatility refers to a recorder's ability to capture sound in many types of social situations with various sound ecologies and noise levels. This can also depend on the quality of the microphone. Field recorders used by journalists to record interviews, informal conversations, and unplanned encounters are also quite versatile, if perhaps a bit less portable than many professional digital voice recorders. A recent comparison of digital recorders in several settings found the Olympus LS-11 and Tascam_ DR-100 suitable for most recording situations.

Computers for Effective Instructional Delivery

A computer is a machine that can be programmed to manipulate symbols. Its principal characteristics are as follows: It responds to a specific set of instructions in a well-defined manner, can execute a pre-recorded list of instructions (a program), and can quickly store and retrieve large amounts of data. Therefore, computers can perform complex and repetitive procedures quickly, precisely, and reliably. Modern computers are electronic and digital. The actual machinery (wires, transistors, and circuits) is called hardware, while the instructions and data are called software. All general-purpose computers require the following hardware components:

i. Central processing unit (CPU): The heart of the computer, this is the component that executes instructions organized in programs ("software") that tell the computer what to do.
ii. Memory (fast, expensive, short-term memory): Enables a computer to store, at least temporarily, data, programs, and intermediate results.
iii. Mass storage device (slower, cheaper, long-term memory): Allows a computer to permanently retain large amounts of data and programs between jobs. Common mass storage devices include disk drives and tape drives.
iv. Input device: Usually a keyboard and mouse, the input device is the conduit through which data and instructions enter a computer.

v. Output device: A display screen, printer, or other device that lets you see what the computer has accomplished.

A computer is defined as a tool or machine used for processing data to give the required information. It is capable of taking input data through the keyboard (input unit) and storing the input data in a diskette, hard disk, or other medium. Also, processing it in the central processing unit (CPU) and giving out the result (output) on the screen or the Visual Display Unit (VDU) is another function of the computer. Kwacha (2007) described a computer as a programmable machine, which responds to a specific set of instructions in a well-defined manner. However, a computer at its most basic is a machine, which can take instructions and perform computations based on those instructions. The introduction of computers in the art of teaching and learning enables teachers to prepare for lessons. It also saves him a lot of time, hence computers can be assigned to the students in their numbers with the supervisory role of the teacher as a facilitator of knowledge. The introduction of computers to teach at the secondary school level of education can serve some importance which can be likened to the importance of the introduction of the art of literacy or numeracy since we live in an information age; an age in which knowledge is power and light, and ignorance of ICT amounts to darkness. The importance of ICT is quite evident from the educational perspective. Though the chalkboard, textbooks, radio/television, and film have been used for educational purposes over the years, none has quite impacted the educational process like the computer. While television and film impact only the audio-visual faculties of users, the computer is capable of activating the senses of sight, hearing, and touch of the users.

Today, computers perform a host of functions in teaching and learning as many nations are adding computer literacy, reading, and writing literacy skills that students will need to succeed in a technologically developed world. Computers are used by students to learn reading, mathematics, social studies, art, music simulation, and health practices. The educational relevance of computers cannot be overemphasized. However, the computer is regarded as an add-on rather than a replacement device. The pedagogic uses of computers according to Olakulehin (2007) necessitates the development among teachers as well as students, the skills and attitudes related to effective use of information and communication technologies.

Rugut and Makewa (2016) conducted a study on the utilization of Educational Media in Teaching and Learning History and Government in Selected Secondary Schools in Kenya, the study investigated the utilization of educational media and its effect on the teaching and learning process in secondary schools in Nandi Central Sub-County. The study was conducted in 10 secondary schools in Nandi Central Sub-County, 5 of which were low-performing schools while 5 were high-performing schools. The response rate for the study comprised 26 History and Government teachers and 180 Form Four students. A causal-comparative research design approach was utilized. The students were selected through cluster sampling techniques (high and low performing) while teachers were selected through stratified random sampling technique. Questionnaires for students and teachers formed the main instrument for data collection. The data analysis utilized both descriptive and inferential statistics. The results of the study showed that educational media resources are rarely used by teachers in teaching History and Government in secondary schools in Nandi Central Sub-County. The utilization of educational media was higher in high-performing schools as compared to low-performing ones. The majority of teachers relied on reference books, school workbooks, magazines, and newspapers in teaching the subject as opposed to the adoption of technological innovations like computers, projectors, and the internet in teaching the subject. The results of the study showed that inadequate provision of educational media resources coupled with inadequate support for the integration of new media resources in teaching and learning were challenges that influenced the utilization of educational media in teaching and learning. Educational media is an effective tool in the teaching and learning process. So it is pertinent that they are available for use in teaching and learning History and Government subjects.

Ghavifekr and Rosdy (2014) researched Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools. Integration of Information, Communication, and Technology (ICT) will assist teachers with the global requirement to replace traditional teaching methods with technology-based teaching and learning tools and facilities. In Malaysia, ICT is considered as one of the main elements in transforming the country for future development. The Ministry of Education, through the

latest Education Blueprint (2013-2025), insights into the importance of technology-based teaching and learning in the schools' national curriculum. This study aims to analyze teachers' perceptions of the effectiveness of ICT integration in supporting the teaching and learning process in the classroom. A survey questionnaire was distributed randomly to a total of 101 teachers from 10 public secondary schools in Kuala Lumpur, Malaysia. The data for this quantitative research were analyzed for both descriptive and inferential statistics using SPSS (version 21) software. The results indicate that ICT integration has great effectiveness for both teachers and students. Findings indicate that teachers' well-equipped preparation with ICT tools and facilities is one the main factors in the success of technology-based teaching and learning. It was also found that professional development training programs for teachers also played a key role in enhancing students' quality learning. It was recommended that for future studies, there is a need for consideration of other aspects of ICT integration, especially from a management point of view regarding strategic planning and policy-making. The importance of technology in the teaching and learning process cannot be over-emphasized. ICT is very essential hence, its application in strategic planning and policy making in schools.

Anunobi, Gambari, Abdullahi, and Alabi, (2016) conducted a study on the effectiveness of web-based instruction on junior secondary school students' retention in basic technology in Minna Niger State, Nigeria. The study examined the Effects of Web-Based Instruction on Junior Secondary School Students' Retention of Basic Technology in Nigeria. Quasi-experimental design (pre-test post-test, non-equivalent, non-randomized control group design) was adopted in this study. 119 Junior Secondary School class two students were drawn from four co-educational registered private secondary schools in Minna Metropolis, Nigeria. Three research questions with corresponding hypotheses were formulated and tested at a 0.05 level of significance. Basic Technology Achievement Test consists of 50 items; multiple choice objectives question was used for data collection. Web-based instruction and the Basic Technology Achievement Test were validated by education technology experts, computer experts, industrial and technology education lecturers, secondary school basic technology teachers, and basic technology students. The Basic Technology Achievement Test was subjected to a pilot test and a 0.90 reliability coefficient was obtained using Pearson Product Moment Correlation Coefficient. The Basic Technology Achievement Test was administered to students in experimental and control groups and data obtained were analyzed using Analysis of Covariance to test the hypotheses. The results of the study indicated that students exposed to web-based instruction retained basic technology concepts than their counterparts exposed to Conventional Teaching Method. There was no significant difference between the mean retention scores of male and female students exposed to Web-based instruction; high, medium, and low achievers' students exposed to web-based instruction retained the concept of Basic Technology equally. Based on the above findings it was recommended that web-based instruction should be used to improve students' retention in Basic Technology. Web-based instruction as an instructional material is very effective in retaining students' knowledge of basic technology.

Nji and Idika (2018) researched the utilization of information and communication technology (ICT) in teaching and learning Economics in Senior Secondary Schools in the Nsukka education zone. The study adopted a descriptive survey design. Four research questions and two null hypotheses guided the study. The instruments used for data collection were the Economics Teacher Utilization of Information Technology Questionnaire (ETUICTQ) and the Economics Student Utilization of Information Communication Technology Questionnaire (ESUICTQ). The instruments (ETUICTQ and ESUICTQ) were trial tested on 40 respondents (10 Economics Teachers and 30 Economics Students) other than those for the sample of the study. The reliability of the instruments was determined using Cronbach Alpha, both obtained 0.81 and 0.79 respectively. The population of the study comprises sixty-nine (69) Economics teachers and six thousand six hundred and fifty students (6,650) students in Nsukka Education Zone. A sample size of 330 Economics students was used while all Economics teachers in the Nsukka Education zone were used. No Sampling was done to select Economics teachers in secondary school but multiple-stage random sampling and simple random samples were used to select Economics senior secondary students. Data were analyzed using mean and standard deviation to answer the four research questions and a t-test was used to test the two null hypotheses at a 0.05 level of significance. The results indicate that teachers had low utilization of ICT in teaching

and students also had low utilization of ICT in learning of Economics in Senior Secondary Schools in Nsukka Education Zone. Also, gender had no significant difference in the utilization of ICT in both teaching and learning of Economics in the Nsukka Education zone. It was concluded that regular training of teachers on the use of ICT for teaching and adequate facilities for ICT should be provided in the school. Also, students should be encouraged to use ICT for learning to attain maximum output.

Statement of problem

The integration of technology in educational institutions is crucial for delivering lessons effectively. Many schools around the world have adopted technology and have moved beyond traditional textbooks and print media in the teaching and learning process, demonstrating efficient management of their ICT resources. However, the situation in Nigeria, particularly in public senior secondary schools in Rivers State, is quite different. It seems that there is a lack of effective management of e-teaching resources in these schools. A majority of public secondary schools in the state do not have ICT laboratories and still rely on traditional teaching methods using textbooks, without fully integrating technology into the learning process. Additionally, many schools lack computers, and those that do have them often do not have an adequate number. Some teachers are not proficient in using the Internet or computers, which is concerning. Moreover, it seems that e-teaching tools are not widely used in the state, and remote teaching via video conferencing is not possible when the teacher is absent. Many teachers do not utilize WhatsApp for teaching, and not all of them have smartphones to download and use the application. Furthermore, it appears that many schools do not utilize WhatsApp and have minimal or no use of recorded audio for teaching. It is on this background that the study looks at how the management of e-teaching tools can improve effective instructional delivery in schools.

Aim and Objectives of the Study

This study aimed to examine the management of e-teaching tools for effective instructional delivery in public senior secondary schools in Rivers State. Specifically, the objectives sought to:

1. identify ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State.
2. assess ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State.
3. examine ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State.

Research Questions

The following research questions guided this study.

1. What are the ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State?
2. In what ways are recorded audio managed for effective instructional delivery in public senior secondary schools in Rivers State?
3. What are the ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State?

Hypotheses

The following hypotheses were tested in the study at a 0.05 level of significance.

HO_4. There is no significant difference between the mean ratings of principals and teachers on ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State.

HO_5. There is no significant difference between the mean ratings of principals and teachers on ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State.

HO_6. There is no significant difference between the mean ratings of principals and teachers on ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State.

METHODOLOGY

The study adopted a descriptive survey design. This type of design is important for this study since it is a design relevant to examining an existing phenomenon upon which inference will be made with the aid of a questionnaire for data collection, which helps in explaining a situation as it relates to this research. The population of this study consisted of 6,485 teaching and management staff (311 principals and 6,174 teachers) in all three hundred eleven (311) public senior secondary schools in the 23 Local Government Areas of Rivers State. The sample size for this study was 355 respondents, consisting of 290 teachers and 75 principals drawn from the entire population using the Taro Yamane formula. The sampling technique for the study was a proportionate stratified sampling technique and this was used in selecting 6 local government areas from 3 Senatorial Districts in Rivers State (Rivers South-East, Rivers West, and Rivers East). The questionnaire was titled "Management of E-Teaching Tools for Teachers Instructional Delivery Questionnaire" (METTTIDQ). The face and content validities of the instrument were determined by three experts in the Department of Test and Measurement, Faculty of Education, University of Port Harcourt. The reliability coefficients were determined using Cronbach Alpha, which established the internal consistency of the test items. The reliability coefficient of the (METTEIDQ) was calculated to be 0.80 which showed that the instruments were high and very reliable. 377 copies of the instrument were administered, and 340 were retrieved. The research questions for this study were answered using mean and standard deviation, while the hypotheses were tested at a 0.05 level of significance using a z-test.

RESULTS

Research Question 1: *What are the ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State?*

Table 1: Mean and Standard Deviation on the mean ratings of principals and teachers on ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State

S/N	Items	Principals 60		Teachers 280		Mean set	
		$\overline{X}_1$	SD_1	$\overline{X}_2$	SD_2	$\overline{XX}$	Decision
1	Making use of WhatsApp messages in delivering instruction	2.56	0.77	2.73	0.32	2.64	Agree
2	Sending assignments through WhatsApp messages	2.54	0.43	2.64	0.42	2.59	Agree
3	Ensuring that students submit short assignments through the use of WhatsApp messages	2.60	0.54	2.58	0.27	2.59	Agree
4	Giving information through WhatsApp messages	2.53	0.62	2.89	0.38	2.71	Agree
5	Passing large information to WhatsApp groups	2.79	0.43	2.60	0.46	2.69	Agree
6	Recording audio and sending to class groups through WhatsApp	2.86	0.23	3.00	0.24	2.93	Agree
7	Instructing WhatsApp messages at any time	2.50	0.62	2.55	0.58	2.52	Agree
8	Teaching students through WhatsApp messages	2.66	0.45	2.67	0.60	2.66	Agree
	Aggregate mean and standard deviation	2.63	0.51	2.70	0.40	2.66	Agree

Data in Table 1 show that all items from 1-8 had weighed mean rating scores greater than the criterion mean of 2.50 and therefore reveals that the respondents agree that the items are the ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State. In summary, with an aggregate mean of 2.66, which is above the criterion mean of 2.50, principals and teachers agree that the ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State are; making use of WhatsApp messages in delivering instruction, sending assignments through WhatsApp messages, ensuring that students submit short assignments through the use of WhatsApp messages, giving information through WhatsApp messages, passing large information to WhatsApp groups, recording audio and sending to class groups through

WhatsApp, giving instruction through WhatsApp messages at any time and teaching students through WhatsApp messages.

Research Question 2: *In what ways are recorded audio managed for effective instructional delivery in public senior secondary schools in Rivers State?*

Table 2: Mean and Standard Deviation on the mean ratings of principals and teachers on ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State

S/N	Items	Principals 60		Teachers 280		Mean set	
		$\overline{X}_1$	SD_1	$\overline{X}_2$	SD_2	$\overline{XX}$	Decision
9	Delivering instruction through the use of recorded audio	2.79	0.77	2.98	0.32	2.88	Agree
10	Using recorded audio to send group assignments	3.01	0.23	2.86	0.12	2.93	Agree
11	Making use of recorded audio to make a class presentation	3.45	0.54	2.54	0.28	2.99	Agree
12	Giving information through recorded audio	2.56	0.62	2.89	0.38	2.75	Agree
13	Interacting with students through the use of recorded audio	2.79	0.22	2.60	0.65	2.69	Agree
14	Recording audio information and sending it to class groups	2.74	0.23	2.51	0.24	2.62	Disagree
15	Providing recording devices in schools	2.50	0.75	2.55	0.76	2.52	Agree
16	Maintaining recording devices available in schools	2.68	0.21	2.62	0.60	2.65	Disagree
	Aggregate mean and standard deviation	2.81	0.44	2.69	0.41	2.75	Agree

Data in Table 2 show that items 9-16 had weighed mean rating scores greater than the criterion mean of 2.50 and therefore reveals that the respondents agree that the items are the ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State. In summary, with an aggregate mean of 2.75, which is above the criterion mean of 2.50, principals and teachers agree that the ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State are; delivering instruction through the use of recorded audio, using recorded audio to send group assignments, making use of recorded audio to make class presentation, giving information through recorded audio, interacting with students through the use of recorded audio, recording audio information and sending to class groups, providing recording devices in schools and maintaining recording devices available in schools.

Research Question 3: *What are the ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State?*

Table 3: Mean and Standard Deviation on the mean ratings of principals and teachers on ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State

S/N	Items	Principals 60		Teachers 280		Mean set	
		$\overline{X}_1$	SD_1	$\overline{X}_2$	SD_2	$\overline{XX}$	Decision
17	Providing computers in schools	3.06	0.27	2.98	0.76	3.02	Agree
18	Securing computers in schools	2.83	0.25	2.55	0.68	2.69	Agree
19	Making use of computers to deliver instruction	2.62	0.65	2.71	0.47	2.66	Agree
20	Ensuring that computer accessories are available in schools	2.74	0.46	2.64	0.51	2.69	Agree
21	Making printers available in schools to print hardcopies of documents	2.61	0.58	2.91	0.68	2.76	Agree
22	Having scanners connected to computers	2.78	0.39	2.75	0.54	2.76	Agree
23	Ensuring that many computers are connected to the internet	2.92	0.34	3.10	0.82	3.01	Agree
24	Having an ICT laboratory in schools	3.04	0.51	2.98	0.88	3.01	Agree
	Aggregate mean and standard deviation	2.82	0.35	2.82	0.63	2.82	Agree

Data in Table 3 show that items 17-24 had weighed mean rating scores greater than the criterion mean of 2.50 and therefore reveals that the respondents agree that the items are the ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State. In summary, with an aggregate mean of 2.82, which is above the criterion mean of 2.50, principals and teachers agree that the ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State are; providing computers in schools, securing computers in schools, making use of computers to deliver instruction, ensuring that computer accessories are available in schools, making printers available in schools to print hardcopies of documents, having scanners connected to computers, ensuring that many computers are connected to the internet and having an ICT laboratory in schools.

Hypothesis 1: There is no significant difference between the mean ratings of principals and teachers on ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State.

Table 4: Summary of z-test Analysis of the Mean Rating Scores of principals and teachers on ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State

Category	N	X	SD	Df	z-cal.	Z-crit.	Sig.	Decision
Principals	60	2.63	.51					Hypothesis
Teachers	280	2.70	.40	338	2.60	1.96	0.05	is rejected

P<0.05

Data in Table 4 show a summary of the z-test analysis of the mean ratings of principals and teachers on ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State. The z-calculated value obtained was 2.60, while the z-critical value was 1.96 at 338 degrees of freedom and 0.05 level of significance. The calculated value of 2.60 is greater than the z-critical value of 1.96; hence there is a significant difference between the mean rating scores of principals and teachers. Based on the observations, the researcher rejected the null hypothesis in favor of the alternative that there is a significant difference between the mean ratings of principals and teachers on ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State.

Hypothesis 2: There is no significant difference between the mean ratings of principals and teachers on ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State.

Table 5: Summary of z-test Analysis of the Mean Rating Scores of principals and teachers on ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State

Category	N	X	SD	Df	z-cal.	Z-crit.	Sig.	Decision
Principals	60	2.81	.44					Hypothesis
Teachers	280	2.69	.41	338	3.15	1.96	0.05	is rejected

P<0.05

Data in Table 5 show a summary of the z-test analysis of the mean ratings of principals and teachers on ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State. The z-calculated value obtained was 3.15, while the z-critical value was 1.96 at 338 degrees of freedom and 0.05 level of significance. The calculated value of 3.15 is greater than the z-critical value of 1.96; hence there is a significant difference between the mean rating scores of principals and teachers. Based on the observations, the researcher rejected the null hypothesis in favor of the alternative that there is a significant difference between the mean ratings of principals and teachers on ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State.

Hypothesis 3: There is no significant difference between the mean ratings of principals and teachers on ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State.

Table 6: Summary of z-test Analysis of the Mean Rating Scores of principals and teachers on ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State

Category	N	X	SD	Df	z-cal.	Z-crit.	Sig.	Decision
Principals	60	2.82	.35					Hypothesis
Teachers	280	2.82	.63	338	2.94	1.96	0.05	is rejected

P<0.05

Data in Table 6 shows a summary of the z-test analysis of the mean ratings of principals and teachers on ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State. The z-calculated value obtained was 2.94, while the z-critical value was 1.96 at 338 degrees of freedom and 0.05 level of significance. The calculated value of 2.94 is greater than the z-critical value of 1.96; hence there is a significant difference between the mean rating scores of principals and teachers. Based on the observations, the researcher rejected the null hypothesis in favor of the alternative that there is a significant difference between the mean ratings of principals and teachers on ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State.

DISCUSSION OF FINDINGS

WhatsApp Messages for Effective Instructional Delivery

The finding revealed that the ways WhatsApp messages are managed for effective instructional delivery in public senior secondary schools in Rivers State include making use of WhatsApp messages in delivering instruction, sending assignments through WhatsApp messages, ensuring that students submit short assignments through the use of WhatsApp messages, giving information through WhatsApp messages, passing large information to WhatsApp groups, recording audio and sending to class groups through WhatsApp, giving instruction through WhatsApp messages at any time and teaching students through WhatsApp messages. The respondents agreed that WhatsApp message is an effective tool for delivering lessons and instruction in educational settings. This finding is in agreement with Church and de Oliveira (2013) who in their study emphasized this fact and stated that WhatsApp has grown in popularity due to its benefits such as being able to send real-time messages to individuals or groups of friends and learners simultaneously, low-cost, and privacy. Also corroborates with Bouhnik and Deshen (2014) who noted that the application can be a useful tool within the scope of learning anytime and anywhere, and also for collaborative learning. On the use of different instant messaging platforms in education, it is also determined that these applications have the potential for to learners' be active in their studies, interaction between students on personal, school, and course-related topics create a sense of belonging, eliminate social barriers and increase learners' motivation. With the help of these benefits, which are also supported by the studies conducted on WhatsApp, the potential of the social networks when designed by the needs of science and information, is alleged to cause revolutionary changes.

Recorded Audio for Effective Instructional Delivery

The finding revealed that the ways recorded audio is managed for effective instructional delivery in public senior secondary schools in Rivers State include delivering instruction through the use of recorded audio, using recorded audio to send group assignments, making use of recorded audio to make class presentations, giving information through recorded audio, interacting with students through the use of recorded audio, recording audio information and sending to class groups, providing recording devices in schools and maintaining recording devices available in schools. Recorded audio involves the use of audio-visual materials to promote or educate learners who are far from the instructors or teachers. This is in agreement with Eje (2016) who stated that it is the extension of education to those who do not have the opportunity to access formal education or to still receive it through correspondence courses, using audio resources as the main medium of instruction in distance learning. Recorded lectures provide alternative instructional methods that can enable the thoughtful

creation of more engaging content. The use of recorded audio lectures increased during the Corona Virus Outbreak (COVID-19) pandemic that shut down classrooms throughout the world.

Computers for Effective Instructional Delivery

The finding revealed that the ways computers are managed for effective instructional delivery in public senior secondary schools in Rivers State include managed for effective instructional delivery in public senior secondary schools in Rivers State are; providing computers in schools, securing computers in schools, making use of computers to deliver instruction, ensuring that computer accessories are available in schools, making printers available in schools to print hardcopies of documents, having scanners connected to computers, ensuring that many computers are connected to the internet and having an ICT laboratory in schools. This is in agreement with Olakulehin (2007) who found that the pedagogic uses of computers accordingly necessitate the development among teachers as well as students, the skills and attitudes related to the effective use of information and communication technologies.

Today, computers perform a host of functions in teaching and learning as many nations are adding computer literacy, reading, and writing literacy skills that students will need to succeed in a technologically developed world. Computers are used by students to learn reading, mathematics, social studies, art, music simulation, and health practices. The educational relevance of computers cannot be overemphasized. A computer system is a combination of hardware and software. The physical and tangible parts/components of a computer that can be seen and touched are known as Hardware.

CONCLUSION

Based on the findings of this study, it was concluded that the management of e-teaching tools for effective instructional delivery in public senior secondary schools in Rivers State includes WhatsApp messages, computers, and electronic books.

RECOMMENDATIONS

1. Principals must always ensure that WhatsApp messages are used regularly for the delivery of instruction in schools. They should encourage teachers to use it to send assignments and information to students.
2. Principals should encourage teachers to record audio messages and send them to students. They should also ensure adequate provision of recording devices
3. Principals should ensure that schools do not lack computers. They should ensure their adequate availability by procuring new ones and repairing faulty ones to enhance the delivery of instruction in schools.

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