



Teachers Digital Readiness To Use Virtual Teaching Tools In Public Senior Secondary Schools In Rivers State

Nwandu, Sandra Ifeoma Edith

Department of Educational Management,
Faculty of Education
University of Port Harcourt, Port Harcourt, Nigeria

ABSTRACT

The study investigated Teacher's digital readiness to use virtual teaching tools in public senior secondary schools in Rivers State. Globally, technology is being adopted in the provision of goods and rendering of services but the extent to which teachers are digitally ready for virtual teaching in Rivers State remains unclear. The study was guided by seven research questions and seven corresponding hypotheses. Descriptive survey design was adopted for the study. The population of the study was 6,573 teachers in the 289 public senior secondary schools in Rivers State out of which 377 teachers were sampled for the study using multi stage sampling technique. The instrument used for data gathering was questionnaire titled "Teachers Digital Readiness to Use Visual Teaching Tools Questionnaire" (TDRUVTQ). The questionnaire was face and content validated by the researcher's supervisors and three other experts (one in the Department of Educational Management and two in Measurement and Evaluation under the Department of Educational Psychology, Guidance and Counseling) from University of Port Harcourt. The reliability of the questionnaire was determined using Cronbach Alpha statistics and the reliability index of the seven clusters of the questionnaire were 0.87 and 0.89, while the average reliability was 0.87. There were 377 copies of questionnaire administered, while 369 copies were retrieved which indicated a 97.9% retrieval rate. The research questions raised were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance. Based on the finding, the study concluded thus male and female teachers with grand mean score of 2.44 and 2.37 both indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State. Therefore recommended thus sensitization is needed for teachers to develop the right belief about the need and use of digital technology in the teaching process.

Keyword: Teacher perception, virtual teaching tools, digital readiness

INTRODUCTION

In the era of scientific and technological advancement, modern society is characterized by the quickening pace of digitalization in all aspects of life, including education. The future of all levels of education is closely related to its digital transformation, which is attracting the attention of the academic community particularly the services rendered by the teacher. This process is characterized by the incorporation of digital technologies into all facets of pedagogical and vocational education, the expansion of the number of information resources available, the use of multimedia tools in the planning of the educational process, and the development of an electronic learning environment. However, several of this effort do not give the teacher the required attention. With the aid of new pedagogical digital tools and technologies, the digital educational environment is a brand-new reality in which all elements of the educational system interact, allowing for the creation of digital learning content and the development of personalized educational routes. Learning remotely can be just as useful or even more efficient than learning in person. In contrast, content, teaching strategies, communication, and learner support are crucial for student satisfaction, according to reports, whereas the delivery media for instructional content is unlikely to have a significant impact on the learning outcomes especially when the

teacher is not adequately prepared for this process. Arguments against teaching via the internet included those related to policy, accessibility, affordability, flexibility, learning pedagogy, and lifelong learning which have all had adverse effects of teachers' digital readiness for virtual teaching particularly in public schools.

Teachers can transmit education to the students through online platforms where they are available, which gives both the teacher and the students the freedom to work at their own pace and in a variety of settings. Researchers have drawn attention to the need for modifying the educational system that currently exists to account for the new learning requirements, the design of learning activities with specific characteristics, and the combination of different types of teachers and students' presence where learning can take place beyond border. In the post-pandemic era, responding to educational crises may lead to improved teaching and learning techniques where the teacher applies acquired digital competencies.

The emergence of changes in the system of professional training across all educational institutions is being accelerated by current trends in the education of students in the mode of remote access to educational resources driven by technology which has also assisted some teachers to develop digital skills. Educational managers and administrators should create all necessary conditions for effective distance learning implementation, adapt the current forms of education, and do so using new information technologies which is beneficial for the attainment of all educational objectives. They also need to intensify teachers' independent training, individualize and differentiate their training needs, expand the number of educational resources available for them, and give the teachers the opportunity to communicate regardless of their locations with their students.

A significant advancement in education in the twenty-first century is online teaching, where online instructors play a crucial role and must be well-trained and tech-savvy if they must be able to service the educational needs of students in a fast-changing society. In most cases, it is advised that adequate time be set aside for teachers in order to first learn the new pedagogical and technical skills before actually using an online classroom in their various educational activities. Online course activities, online teaching techniques, student engagement, and the suitability of online delivery for the particular discipline are all important factors to take into account by teachers irrespective of the subject that is being handled. Years of teaching experience, self-efficacy with regard to communication and learning transfer, as well as the teacher's abilities for self-directed learning, are additional factors that may affect teachers' readiness for virtual teaching in any school setting.

Statement of the Problem

Teaching and learning is no longer business as usual especially with presents of Artificial Intelligence occasioned with varying applications. New discovery giving birth to new technologies is now the order of the day. This calls for the need to unlearn and relearn what is already known. Teacher could be seen as pioneers of this drive. These new technologies are products of new approaches to virtually all aspects of life especially the educational sector. Teaching and learning has taken new approaches, teachers due to inexperience seem to be at variance with these new technologies. This may result in not knowing how to apply these new technologies in teaching and learning thereby causing so much set back in the teaching and learning process. Could it be that teachers are not familiar with these tool or they are lacking the necessary experience they need in achieving the objectives of teaching and learning? This study sought to investigate Teachers digital readiness to use virtual teaching tools in public senior secondary schools in Rivers State.

Aim and Objectives of the Study

The aim of the study was to investigate digital readiness to use visual teaching tools in public senior secondary schools in Rivers State. In specific context, the objectives of the study were to:

1. examine the extent of teachers' digital channels familiarization readiness for virtual teaching in public senior secondary schools in Rivers State
2. determine the extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State

Research Questions

The following research questions were raised to guide the study:

1. What is the extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State?

2. To what extent is teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital channels familiarization readiness for virtual teaching in public senior secondary schools in Rivers State
2. There is no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State

Literature Review

Online Collaborative Learning Theory by Linda Harasim

The Online Collaborative Learning Theory was developed in 2012 by Linda Harasim and this theory focuses on the assumption that students with different abilities to perform in their academic work can come together in the learning process to pursue a common goal. This theory was initially regarded to as Computer Mediated Communication (CMC) since the system functions on the premise that a network needs to be established for the learning system to take place.

The online collaborative learning theory posits that on this digital learning process, learning can only take place when certain conditions have been met and this includes that first, there must be an idea generation where active brainstorming is carried out where people with different line of thoughts bring their knowledge together so that each participant can benefit from the large cache of information that is available to the group. This is followed by the second order need which is the idea organization where the ideas that have been generated are put together in a sequential order and analyzed through the process of discussion, criticism and contributions so that the idea gathered can be useful to the members of the group. The final stage is the intellectual convergence and it is at this stage that intellectual synthesis and harmonization occurs and the end of this process leads to either agreeing or disagreeing with the idea that has been generated for the common good of all. This process makes it easy for knowledge that has been generated and accepted to be applied in real situations.

The OCL operated in a non-synchronous, location-independent environment like many other online teaching models. Up to a point, students are typically allowed to participate in class discussions at a time that is convenient for them and from any location with internet access. In contrast to other models, the OCL model places discussion at the center of learning while viewing textbooks and other materials as supplemental to the actual teaching that take place where the teacher and students can engage each other. This contrasts with conventional online courses, where readings might serve as the primary content and discussions serve as the secondary content. Traditional online course participants may have a propensity to skip discussions because they view them as extra work that won't affect their grade.

According to the author of this theory, the teacher is essential to this knowledge construction not only by facilitating the process and giving the learners resources, but also by making sure that the fundamental ideas and procedures of the subject domain are completely incorporated. Here, it is assumed that the instructor is a representative of the scientific field or academic field being studied. This theory has areas of strength which are that online collaborative learning can encourage discussions that are on par with, if not better than, those found in face-to-face campus classrooms and deep learning. This means that this theory foresees that more meaningful learning can take place on the online platform than what is obtainable in the physical classroom setting. Similarly, any drawbacks, such as the absence of physical cues, are outweighed by the no synchronicity that OCL provides as well as its other advantages. This theory supports advanced abilities like evaluation, synthesis, and analytical thinking and these are all required for any meaningful teaching and learning to take place in the school.

The OCL theory is relevant to this study as it emphasizes the need for proper brainstorming and organization of thought for learning to take place. Online learning and teaching is very technical and this theory emphasizes the need for teachers and students to harmonize their ideas on how this system can be beneficial to all

stakeholders and this is important for the gains of online education to be accruable to the teacher and the students.

Teachers' Digital Channels Familiarization Readiness for Virtual Teaching

One of the factors that determine if teachers are digitally ready for virtual teaching at any level of education is their familiarization and ability to use digital channels for teaching their students irrespective of their location. Virtual teaching occurs within a medium which are referred to as channels of communication between the teacher and students and there are various forms of these channels which teachers need to be familiar with. There is no way the teacher can deliver virtual teaching without engaging one or more of these channels and adopting the one which the teacher is more familiar with is important for meaningful engagement with students.

Prior to the COVID 19 pandemic era, some of these channels already exists but some teachers were not familiar with them and hence were not digitally ready for virtual teaching. However, the period of the pandemic introduced various other channels which teachers had to understudy in order to be able to use them. In Nigeria, during this period, several training activities were designed by different schools to educate their teachers on how to use some of these channels as this was essential for making them digitally ready for virtual teaching. It was through these educational technology platforms that teachers were able to deliver virtual teaching which gives the students access to course materials that made teaching and learning possible by providing access to a wide range of other materials for teaching and learning that led to the attainment of outlined educational objectives. However, to create dynamic and captivating lessons, the teacher was expected to be able to utilize a variety of tools, which were available on these various channels.

There are different types of virtual teaching channels which teachers can use today, and each has its own unique features which the teacher can use depending on the level of education, type of lesson to be deliver among other factors. Online channels like Canvas, Blackboard, Zoom, Moodle, and Microsoft Teams are among the existing and popular channels to mention a few and these have been used over time for virtual teaching. For example, the Microsoft Teams channel has started to receive the most attention (Nguyen & Duong, 2021), and the platform quickly gained popularity because it facilitated information sharing and collaboration among team members, especially when it came to interacting through messaging, calling, chatting, meetings, and content sharing (Ilag and Sabale, 2022; Nguyen & Duong, 2021). This platform competes favourably with others and some teachers have been using this channel to teach their students when it becomes impossible for the teacher and students to meet in a physical classroom.

According to research, Microsoft Teams is a kind of platform that facilitates online instruction and learning and may ease communication between teachers and their students. It is also believed that this channel gives groups of people access to voice, video, and content sharing capabilities as well as information sharing. This is done by leveraging on other Microsoft resources which include the ability to store data across all of the platform's features. Similarly, there are other channels of communication such as zoom which has gained increase popularity among educators. The Zoom channel became more popular after the pandemic despite the fact that it has been in existence for some time and some educators found this medium useful and easy to use for instructional delivery. However, there are limits to the number of students that the teacher can host on the platform like some other channels and this are some of the determinants of which channel a teacher may eventually decide to use.

Skype has also been very useful for several decades for virtual teaching among teachers that were familiar with it. It provided same opportunity for several people to engage in videoconferencing where teaching and learning can take place and other platforms such as Google meet, cisco webex have also been helpful in assisting the teacher to deliver their lessons when needed. The teacher only needs to be familiar with the existence of these channels and understand how to use them to be certified digitally ready to be able to engage in virtual teaching irrespective of the level of education.

Teachers require support to be able to embrace, practice and adhere to virtual teaching initiatives in the school. According to Buabeng-Andoh (2012), numerous governments have started investing globally in ICT to enhance teaching and learning in schools and this is premised on the believe that investment in technology will not only promote its adoption but will also improve on the quality of educational service delivery. One of the factors that has continued to influence the successful implementation of virtual education in schools is the

rate of technological investment by all relevant and critical educational stakeholders. In addition to affecting the needs of contemporary societies, the information, communication, and technology (ICT) sector's explosive growth has brought about significant changes in the twenty-first century school system, and this is occasioned by the investment of the government, parents and other relevant stakeholders in the school setting. ICT is playing a bigger role in both our daily lives and the way we educate students. As a result, there is a rising need for educational institutions to use ICT to impart on students the knowledge and skills they require for the twenty-first century virtually driven educational system. The experience and personal orientation of the teacher also have a way of influencing their adoption of technology in teaching and learning. This is because several teachers have attempted to engage in virtual education with very little support from the school authority and the government because they have a personal belief and satisfaction that they derive from enforcing this method of instructional delivery.

There are several other factors that have the capacity to influence how teachers will react to the implementation of virtual education in their school. According to Khong, Celik, Le, Lai, Nguyen and Bui (2023), teachers are only moderately prepared to implement the digital curriculum in terms of both technical and pedagogical readiness and this is attributed to teacher identified factors which includes technical hitches in the virtual education process in which the things that prevent teachers from being ready include limitations such as time, knowledge and expertise, infrastructure, and technical support. All of these factors have roles they play in determining how prepared the teacher is for the implementation of digital education in their various schools. The degree to which teachers believe that using a particular digital system that will enhance their job performance can also be used to describe how useful a person perceives a particular technology to be in terms of making their work more efficient. The expectation that a particular technology will make the teachers work more efficient and effective also go a long way to determine their use of such technologies.

The educational policies guiding educational programmes and activities in the schools are also part of the influencing factors that affect teachers' integration of virtual teaching and learning in the school. There is no doubt that Information and communication technology (ICT) integration into the educational process has many benefits, but some of these benefits have remained eroded as a result of educational policies that limit teachers from personally enforcing virtual education in their teaching activities. In this sense, the use of ICT in the classroom to supplement conventional teaching strategies is linked to higher levels of student motivation because it makes use of more appealing, entertaining, and enjoyable tools but most teachers are limited from enforcing this process on their own without permission from educational authorities and unfortunately there are no clear cut policies in place that authorize the teacher to enforce this practices on their own and this affects the virtual education process in the school to a large extent.

Holt et al., (2010) asserted that the collective capacity of the workforce of any organization to carry out pertinent organizational interventions is thought to be significantly influenced by organizational resources, endowment, and situational factors. This means that the availability of essential digital resources, organizational climate such as school policy and the enforcement of digital support are some of the factors that can enable teachers to embrace virtual education as an alternative instructional delivery process in today's digital space. There is no doubt that educational institutions must adopt a culture of continuous learning and improvement if they want to remain competitive and be prepared to offer students and other stakeholders an improved educational experience through the implementation of sustainable virtual education. Scholars such as Nardi and Ranieri (2019) agreed with Quintero (2020) to point out that although institutional bureaucracy and a lack of adequate technological infrastructure are significant barriers to technology enhanced learning in many developing countries, Schweighofer et al., (2019) noted that it will be difficult for organizational goals and objectives to be achieved if these barriers are not removed and this explains why it has remained challenging for teachers to be digitally ready for the implementation of virtual education in most public schools as several of these influencing factors have not been preparedly addressed for successful virtual education implementation in public schools.

Teachers' Digital Experience Readiness for Virtual Teaching

Research conducted in Africa has shown that most educators are not proficient in technology and require a great deal of professional development in order to effectively integrate technology into the classroom (Aluko,

2019). This is because several of these teachers lack the experience to be able to use these technologies to achieve educational goals and objectives. Digital experience is generally understood as an interrelated set of skills that are vital for success in this digital age and it is necessary to access appropriate ICTs and enhance digital competence that is needed for virtual teaching. Effective virtual teaching is hampered by teachers' lack of ICT knowledge and proficiency since educators must be familiar with the digital media cultures that are essential for students and this experience is sadly lacking among several teachers. Additionally, they must be capable of using technology pedagogically in ways that are relevant to the subject or subjects they are teaching, and this can only be so when the teacher has gathered some level of knowledge or experience in the past for this to happen.

Every aspect of the human life is impacted by technology, which has also altered how we find information, communicate, learn, entertain ourselves, and acquire knowledge and this is also true for the education sector. At every stage of the educational system, these changes are already and will only get more noticeable and teachers who intend to use these innovations must be able to build a knowledge base which forms their wealth of experience on how to leverage this development. The development of students' digital ability, the enhancement of their specialized knowledge and foundational skills, and teachers' working methods in pedagogical, and administrative contexts are all facing new challenges as a result of this process and this is because several of the teachers who handle the instructional process do not have the basic experience on how these technologies function. It is crucial now more than ever for students to be critical consumers and active content creators rather than just passive learners but this chain of transformation starts with the teacher building experience that will revolutionize the virtual teaching space at any level of education.

Experience they say is the best teacher and fostering students who can recognize reliable sources, protect their intellectual property, apply moral principles and behaviors in interactions and communications, create their own digital resources, and cultivate a reflective relationship with regard to their own and other people's behavior, cultural differences, values, and rights are all part of what virtual teaching can deliver if the teacher had developed this understanding either through capacity building or training activities that revolves around how to leverage on these technologies. Without the required experience, there is no teacher that can be said to be digitally ready to engage in virtual teaching that will result to the attainment of expected educational goals and objectives.

Teacher engagement which results to gathering experience is clearly different from general work engagement because, even in the automated age, teachers' dedicated social engagement with students and emotional attachment to the school environment are essential to their success. However, succeeding in enforcing virtual teaching requires developing specific expertise which may happen first by deliberately acquiring knowledge through training. Sadly, while students are quickly adopting technology-enabled learning systems, teachers find it extremely difficult to incorporate technology because they are digital immigrants (Kirschner & De Bruyckere, 2017) and the implication of this is that the teachers are unable to deliver the kind of virtual teaching that will meet the yearnings of students. It is clear that in some cases, the students are more advanced than the teachers on how these technologies work and since the teacher lack the required experience, they are unable to enforce any virtual teaching that will meet the expectation of their students because the teachers lack the required training to do so since they have not engaged in any sponsored or self-training on the use of digital technologies for virtual teaching.

There are various strategies that are essential in assisting teachers build this readiness. It is important for proper attention to be given to teachers in order to make them ready for the intended virtual education programme implementation in public schools across the state. Nicart and Aban (2022) noted that technology in the classroom gives teachers more control over the teaching-learning process. However, a major concern right now is how students are learning to use various technological platforms in their classroom lessons. The implementation of virtual education in most schools that have attempted it have not been without challenges and this calls for more decisive actions. In order to ensure that technology was implemented properly and that users had the skills, confidence, and capability to use the technology, it was crucial to involve users such as staff, students, and parents in the implementation process. Training of users of these technologies is critical for its implementation and this is in addition to providing the essential tools that will make the process work.

Part of the strategies that will be required to make teachers ready for this digital switch will require both training as well as the provision of the needed tools.

Ogunleye, Afolabi, Ajayi, and Omotayo (2023) indicated that virtual education implementation is dependent upon the resources that an institution has. This means that if the schools are not prepared for this change, the readiness of the teachers will also be affected as the preparation of the teacher hinges on the readiness of the school. Researchers such as Ogunleye, Afolabi, Ajayi, and Omotayo (2023) have continued to point out that a high-performing digital education ecosystem is essential for the nation but for this to be achieved, attention must be paid to the issues of infrastructure, connectivity, organization, and capacity which are all important for the success of the process. There is need for the government and other school administrators to put in place the needed infrastructure to support the preparation of the teacher and internet facilities also need to be provided where necessary. The government and other supporting institutions therefore need to be deliberate in the implementation of the virtual education programme and this includes supporting the teacher digitally in every way possible for this target to be achieved.

Ahmadi and Nourabadi (2020) are among the scholars who have indicated that cultural barriers are the main obstacles to implementing virtual utilization education. This means that adequate sensitization is needed for any effort that will enable teachers to become digitally ready in today's technology driven education system. They also pointed out that the top implementation barriers to offering virtual education are a lack of support from university administrators, a lack of information and practical training for students, and a lack of awareness among higher education authorities. This suggests the need for collaborative effort among the various stakeholders particularly school administrators and the government to create the enabling environment that will make teachers to be digitally ready for virtual education implementation particularly in the nation's public schools.

Assisting teachers to be digitally ready for the aspiration of virtual education in public schools is highly significant not just to the teacher alone but to all educational stakeholders at large. Digital technology can enhance learning and teaching, assist improve levels of achievement and close the achievement disparity in areas where teachers are supported through professional development, resources, and leadership. All of these are needed to ensure that the teacher is able to build the needed cognitive, physical and practical competence that is needed for the system to work. Some level of general and specialized digital skills that are so important for learning, life, and work in an increasingly digital world will also need to be developed in the teachers through the skillful integration of digital technology in various school activities. This will enable teachers to be ready for this change process. Until when teachers see some level of commitment from the school administrator, they are likely not to take the process seriously or prepare for this digital change. The effective use of digital technology depends not only on teachers having access to enough training, knowledge, and support networks, but also to enough equipment, tools, and resources. Oladunni and Oredein (2023) added that in-service training, workshops, and seminars on digital leadership training for school leaders, teachers, and students can be of help in some ways. Therefore, giving teachers this assistance will enable them to comprehend the advantages and uses of these digital technologies and also make efforts to ensure that they are not left out of this change process which has become globally acceptable.

METHODOLOGY

Descriptive survey design was adopted for the study. The population of the study was 6,573 teachers in the 289 public senior secondary schools in Rivers State out of which 377 teachers were sampled for the study using multi stage sampling technique. The instrument used for data gathering was questionnaire titled "Teachers Digital Readiness to Use Virtual Teaching Tools Questionnaire" (TDRUVTQ). The questionnaire was face and content validated by the researcher's supervisors and three other experts (one in the Department of Educational Management and two in Measurement and Evaluation under the Department of Educational Psychology, Guidance and Counseling) from University of Port Harcourt. The reliability of the questionnaire was determined using Cronbach Alpha statistics and the reliability index of the seven clusters of the questionnaire were 0.87 and 0.89, while the average reliability was 0.87. There were 377 copies of questionnaire administered, while 369 copies were retrieved which indicated a 97.9% retrieval rate. The

research questions raised were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance.

RESULTS

Research Question One: *What is the extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State?*

Table 1: Mean and Standard Deviation Scores on the Extent of Teachers' Digital Channels Familiarization for Virtual Teaching in Public Senior Secondary Schools in Rivers State

S/No	Statements	Male Teachers n=177			Female Teachers n=192			Decision	Decision	X ₁	X ₂
		Mean	\bar{X}_1	SD	Mean	\bar{X}_2	SD				
16	Competence in using Skype to teach students	2.44		0.89	2.38		0.91	Low Extent	Low Extent	2.41	
17	Adoption of Google meet as a medium for instructional delivery	2.42		0.91	2.46		0.89	Low Extent	Low Extent	2.44	
18	The use of zoom to teach students irrespective of their location	2.63		0.85	2.52		0.90	High Extent	High Extent	2.58	
19	Utilization of Microsoft teams for teaching students	2.39		0.92	2.27		0.94	Low Extent	Low Extent	2.33	
20	Cisco webex can be used to deliver lesson to students	2.33		0.94	2.22		0.96	Low Extent	Low Extent	2.28	
	Grand Mean and Standard Deviation	2.44		0.90	2.37		0.92	Low Extent	Low Extent	2.41	

Table 1 pointed out the responses of the male and female teachers to items 16, 17, 18, 19 and 20 which produced mean responses of 2.44, 2.42, 2.63, 2.39 and 2.33 for the male teachers as well as 2.38, 2.46, 2.52, 2.27 and 2.22 for the female teachers. From the responses, only item 18 had mean value that was above the criterion mean score of 2.50 used for decision making from the responses of the male and female teachers and this implied that there was a high extent to which zoom was used for virtual teaching as part of the digital channels familiarization readiness of the teachers while the other items were all below the criterion mean score from both the male and female teachers and this implied that these items existed to a low extent. The grand mean score of 2.44 from the male teachers and 2.37 from the female teachers both indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State. The mean set score of 2.58 which was averagely the highest suggested that zoom was the main channel used by the teachers while Cisco webex was the least with mean set score of 2.28. The average mean set score of 2.41 indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State

Research Question Two: *To what extent is teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State?*

Table 2: Mean and Standard Deviation Scores on the Extent Is Teachers' Digital Experience Readiness for Virtual Teaching in Public Senior Secondary Schools in Rivers State

S/No	Statements	Male Teachers n=177			Female Teachers n=192			X ₁	X ₂
		Mean \bar{X}_1	SD	Decision	Mean \bar{X}_2	SD	Decision		
26	Teachers are well informed on the contents of the digital platforms they use for teaching	2.56	0.87	High Extent	2.63	0.87	High Extent	2.60	
27	Teachers can develop digital modules that will be used to transmit lessons	2.42	0.91	Low Extent	2.38	0.91	Low Extent	2.40	
28	Ability to teach others on how they can maximize the benefits of the digital platforms they intend to use	2.54	0.88	High Extent	2.38	0.91	Low Extent	2.46	
29	Ability to use multiple digital performs to ensure that scheduled instruction is appropriately delivered	2.38	0.92	Low Extent	2.29	0.93	Low Extent	2.34	
30	Teachers engage in ICT training to build virtual teaching competence	2.64	0.85	High Extent	2.64	0.87	High Extent	2.64	
Grand Mean and Standard Deviation		2.51	0.89	High Extent	2.46	0.90	Low Extent	2.49	

Table 2 indicated that the responses to items 26, 27, 28, 29 and 30 by the sampled male teachers produced mean values of 2.56, 2.42, 2.54, 2.38 and 2.64 while the female teachers responded to the same set of items with mean scores of 2.63, 2.38, 2.38, 2.29 and 2.64. Items 26, 28 and 30 from the male teachers with mean values of 2.56, 2.54 and 2.64 were above the criterion mean score of 2.5 used for decision making and implied that the items existed to a high extent while items 27 and 29 with mean values of 2.42 and 2.38 were below the criterion mean score and this implied that the items existed to a low extent. On the other hand, items 26 and 30 from the female teachers produced mean values of 2.63 and 2.64 and this implied that the items existed to a high extent while items 26, 27 and 28 with mean responses of 2.38, 2.38 and 2.29 were below the criterion mean score and implied that the items existed to a low extent. Summarily, the grand mean score of 2.51 from the male teachers and 2.46 from the female teachers showed that for the male teachers, there was a high extent while for the female teachers there was a low extent with grand mean response of 2.46 on teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State. The highest mean set score of 2.64 showed that there was a high extent to which the teachers engaged in ICT training to build virtual teaching competence on the average while the least mean set score of 2.34 indicated that the teachers indicated a low extent of use of multiple digital channels for their services. The average mean set score of 2.49

established that there was a low extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State.

Hypothesis One: There is no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital channels familiarization readiness for virtual teaching in public senior secondary schools in Rivers State

Table 3: Summary of z-test Analysis on the Difference in the Mean Score of Mae and Female Teachers on the Extent of Teachers' Digital Channels Familiarization Readiness for Virtual Teaching in Public Senior Secondary Schools in Rivers State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Teachers	177	2.44	0.90	367	0.74	1.96	0.05	Not Rejected
Female Teachers	192	2.37	0.92					

Table 3 indicated that at 0.05 level of significance and 367 degrees of freedom, the value of z-crit. was 1.96 and this value was more than the estimated value of z-cal. of 0.74 and as such, the null hypothesis was not rejected implying that there was no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital channels familiarization readiness for virtual teaching in public senior secondary schools in Rivers State.

Hypothesis Two: There is no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State

Table 4: Summary of z-test Analysis on the Difference in the Mean Score of Male and Female Teachers on the Extent of Teachers' Digital Experience Readiness for Virtual Teaching in Public Senior Secondary Schools in Rivers State

Variable	n	Mean	SD	df	z-cal.	z-crit.	Level of Significance	Decision
Male Teachers	177	2.51	0.89	367	0.54	1.96	0.05	Not Rejected
Female Teachers	192	2.46	0.90					

Table 4 showed that at 0.05 level of significance and 367 degrees of freedom, the value of z-crit. was 1.96 and this value was more than the estimated value of z-cal. of 0.54 and as such, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State.

DISCUSSION

Teachers' Digital Channels Familiarization Readiness for Virtual Teaching

The average mean set score of 2.41 indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State. It was indicated from the findings of the study that both for the male and female teachers, there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State and that there was no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital channels familiarization readiness for virtual teaching in public senior secondary schools in Rivers State. This finding aligns with that of the study by Nwafor, Ejoh, Chukwurah and Okeke (2023) which showed relatedness in teachers' proficiency with digital channels for teaching. Al-Awidi and Aldhafeeri (2017) identified in the finding of their study also that teachers are not particularly prepared for this system of teaching and this may explain why their familiarization with these platforms remain very low. The responses from the teachers showed that the major digital channel that the teachers are familiar with for virtual teaching is the zoom platform. This finding may be due to the fact that the zoom platform became popular after the

pandemic and it could also be that this platform is easier to use other than the others and this explains why the teachers are familiar with this channel to a higher extent. Similar study by Gurung (2021) equally supported this finding as it was discovered that educators used Google Classroom, Whatsapp, Zoom, and Google Meet. However, the zoom platform is popular for several reasons known to teachers may include cost effectiveness, ease of use, efficiency, among several other factors.

There are several other digital channels that teachers need to be familiar with for virtual teaching but from the responses of the male and female teachers, they are not very familiar with these channels. Although Adekunle and Opeyemi (2021) revealed in the finding of their study that Whatsapp is the most popular online teaching platform, this platform is not significant as it is very limited in terms of the educational activities it can be used to initiate when compared to the other identified platforms. Skype has been in existence for several years and has been used largely in the business world but its application in the education sector remained very small until recently and this may explain why the teachers indicated that there is a low extent to which they are familiar with this digital channel. The teachers also indicated from their responses that there is a low extent to which they are familiar with the Google meet platform. The reason for this may also be because this platform is fairly new to some of these teachers. In the same manner, the low extent of familiarization with Microsoft teams may also be because this platform only recently began to gain popularity among teachers. Cisco webex also ranked as low extent among the teachers in terms of the teachers' familiarization with this channel. It is important for the government and educational administrators to put in effort to change this narrative as Rayle (2021) pointed out in the finding of his study that making these changes is significant to the success of educational goals attainment in schools. Basically, there is need for teachers to be introduced and trained on the use of several of these digital channels for any successful virtual teaching in these schools. According to Bello, Alabi, Bello, Bello and Sulaiman (2022), teachers have a positive perception towards online teaching but they need to improve on their familiarization and utilization of available platforms and this is where several of these teachers are still lacking.

Teachers' Digital Experience Readiness for Virtual Teaching

The average mean set score of 2.49 established that there was a low extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State. The study showed that for the male teachers, there was a high extent but for the female teachers, there was a low extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State. Similarly, there was no significant difference between the mean ratings of male and female teachers on the extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State. This finding agrees with the outcome of the study by Lidinillah, Robandi, Wahyudin and Dianasari (2021) which indicated that gender has no effect on digital experience except age and technological adoption. The teachers basically showed some level of digital experience that is needed for virtual teaching. This finding slightly differs from what Mirçe, Cakula and Tzivian (2019) obtained in their study which showed that gender was statistically significant to these experiences. The teachers pointed out a high extent to which they are informed about what makes up a virtual teaching system. The high awareness level on the content of digital platforms for virtual teaching is an indication that the teachers have some level of knowledge about this system.

The teachers from their responses also pointed out that there is a high extent to which they engage in ICT training so as to develop the needed digital experience that will be needed for virtual teaching. Clarin and Baluyos (2022) asserted that teachers must be adequately prepared before they can engage in virtual teaching and this requires exploring all avenues of knowledge acquisition. Engaging in ICT capacity building helps the teacher to build the experiences that will be needed for virtual teaching when the opportunity arises for them. Eze, Chinedu-Eze, Okike and Bello (2020) agreed that organizations that provide such training support are able to achieve their digital education implementation processes faster and better. However, in terms of the ability to teach or train others, there was a high extent to which the male teachers can train others while the female teachers can only do this to a low extent. Pozas, Letzel-Alt and Schneider (2022) alluded in their findings to this study that the emotional state of the teacher determines how much they can accomplish in the digital space. Contreras, Picazo, Cordero-Hidalgo and Chaparro-Medina (2021) pointed out that feeling of anxiety among other emotional factors can be responsible for why teachers have not been able to develop the

needed digital experience for virtual teaching. This means that although the teachers have some level of experience, this may not be adequate for these teachers to become a trainer for other teachers.

On the other hand, there is a low extent to which the teachers can develop digital modules that will be used for teaching. This again emphasizes the fact that the teachers might have some digital experience but this may not be adequate enough for them to explore all that can be done in a virtual teaching platform. The teachers might therefore need to gather further experiences to be able to maximize the benefits of virtual teaching in their schools. The teachers equally showed from their responses that there is a low extent to which they are able to use multiple channels for virtual teaching. This again goes to buttress the earlier finding that the digital experience of the teachers is still low and that their familiarization with digital channels is still low and these are areas that require intervention for sustainable virtual teaching in these schools.

Summary of Findings

The following summaries of findings were highlighted based on the analysis of data collected and presented in the study:

1. The male and female teachers with grand mean score of 2.44 and 2.37 both indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State. The average mean set score of 2.41 indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State.
2. The grand mean score of 2.51 from the male teachers and 2.46 from the female teachers showed that for the male teachers, there was a high extent while for the female teachers there was a low extent with grand mean response of 2.46 on teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State. The average mean set score of 2.49 established that there was a low extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State.

CONCLUSION

Based on the findings of the study, it was concluded that teachers digital readiness to use virtual teaching tools in public senior secondary schools in Rivers State from the findings male and female teachers with grand mean score of 2.44 and 2.37 both indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State. The average mean set score of 2.41 indicated that there was a low extent of teachers' digital channels familiarization for virtual teaching in public senior secondary schools in Rivers State. The grand mean score of 2.51 from the male teachers and 2.46 from the female teachers showed that for the male teachers, there was a high extent while for the female teachers there was a low extent with grand mean response of 2.46 on teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State. The average mean set score of 2.49 established that there was a low extent of teachers' digital experience readiness for virtual teaching in public senior secondary schools in Rivers State.

RECOMMENDATIONS

The following recommendations were drawn from the findings of the study:

1. Sensitization is needed for teachers to develop the right belief about the need and use of digital technology in the teaching process. School administrators need to engage in massive sensitization of teachers and other school personnel on the benefits that can be derived from adopting digital technology in the teaching process. This can also be achieved through adequate networking and collaboration that will enable teachers see and understand how digital technology is transforming the teaching space in other spheres. This will enable teachers cultivate the right belief about the gains of digital technology for teaching.
2. Mentoring should be encouraged between experienced and less experienced teachers on the use of digital technologies for teaching. Teachers who are experienced in the use of digital technologies for teaching should be encouraged to mentor those who are not on how and areas in which emerging

technologies can be used to facilitate virtual teaching for the achievement of outlined educational goals and objectives in the school.

REFERENCES

- Adekunle, S. A. & Opeyemi, O. A. (2021). Impact of e-learning on secondary school students in Nigeria during COVID-19 lockdown: *International Journal of Scientific Research in Computer Science and Engineering*, 9(6), 94-104
- Ahmadi, J. & Nourabadi, S. (2020). Implementation barriers in virtual education in Payame Noor University in Iran: *Utopía y Praxis Latinoamericana*, 25(2), 202-209
- Al-Awidi, H., & Aldhafeeri, F. (2017). Teachers' readiness to implement digital curriculum in Kuwaiti schools: *Journal of Information Technology Education: Research*, 16, 105-126
- Aluko, F. R. (2019). Multilingualism as a resource for teaching and learning: Maximizing prevalent affordances to overcome persistent challenges. In F. M. Omidire (Ed.), *Multilingualism in challenging education settings: Supporting learning and development*. Cengage
- Bello, G., Alabi, H. I., Bello, Z. A., Bello, I. A. & Sulaiman, M. M. (2022). Science teachers' perceptions of integration of m-learning into class instructions in Kwara State, Nigeria: *Science Education International* 33(3), 335-341
- Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature. *International Journal of Education and Development using Information and Communication Technology*, 8(1), 136-155
- Clarín, A. S. & Baluyos, E. L. (2022). Challenges encountered in the implementation of online distance learning: *Journal of Education and Learning Innovation*, 2(1), 33-46
- Eze, S. C., Chinedu-Eze, V. C. A., Okike, C. K. & Bello, A. O. (2020). Factors influencing the use of e-learning facilities by students in a private Higher Education Institution (HEI) in a developing economy. *Humanities and Social Science Communication*, 7, 133
- Gurung, S. (2021). Challenges faced by teachers in online teaching during COVID 19 pandemic: *The Online Journal of Distance Education and e-Learning*, 9(1), 8-18
- Holt, D. T., Helfrich, C. D., Hall, C. G., & Weiner, B. J. (2010). Are you ready? How health professionals can comprehensively conceptualize readiness for change. *Journal of General Internal Medicine*, 25(1), 50–55
- Ilag, B.N. & Sabale, A.M. (2022). *Microsoft Teams overview. In troubleshooting Microsoft Teams*. Apress
- Khong, H., Celik, I., Le, T. T. T. & Lai, V. T. T., Nguyen, A. & Bui, H. (2023). Examining teachers' behavioural intention for online teaching after COVID-19 pandemic: A large-scale survey. *Education and Information Technologies*, 28, 5999–6026
- Kirschner, P. A. & De Bruyckere, P. (2017). The myths of the digital native and the multitasker: *Teaching and Teacher Education*, 67, 135-142
- Lidinillah, D.A.M., Robandi, B., Wahyudin, W. & Dianasari, D. (2021). Elementary teachers' readiness to implement online learning during the covid-19 pandemic. *Premiere Educandum: Jurnal Pendidikan Dasar dan Pembelajaran*, 11(2), 172–190
- Mirke, E., Cakula, S. & Tzivian, L. (2019). Measuring teachers-as-learners' digital skills and readiness to study online for successful e-learning experience: *Journal of Teacher Education for Sustainability*, 21(2), 5-16
- Nardi, A., & Ranieri, M. (2019). Comparing paper-based and electronic multiple-choice examinations with personal devices: impact on students' performance, self-efficacy and satisfaction. *British Journal of Educational Technology*, 50(3), 1495–1506
- Nguyen, H. U. N. & Duong, L. N. T. (2021). The challenges of e-learning through Microsoft Teams for EFL students at Van Lang University in COVID-19: *Asia CALL Online Journal*, 12(4), 18-29
- Nwafor, P. I., Ejoh, A. O., Chukwurah, M. U. & Okeke, S. U. (2023). Assessment of teachers' competence in utilization of digital instructional tools in upper basic schools in Cross River State, Nigeria: *Global Journal of Educational Research*, 22, 165-175

- Ogunleye, J. K., Afolabi, C. S., Ajayi, S. O. & Omotayo, V. A. (2023). Virtual learning as an impetus for business education programme in the midst of COVID-19 in Nigeria: *Health Economics and Management Review*, 2, 83-89
- Oladunni, F. J. & Oredein, A. O. (2023). Virtual classroom management during COVID-19 in Nigeria: Insights from TPACK. *Edumania-An International Multidisciplinary Journal*, 1, 188-197
- Pozas, M., Letzel-Alt, V. & Schneider, C. (2022). The whole is greater than the sum of its parts: Exploring teachers' technology readiness profiles and its relation to their emotional state during COVID-19 emergency remote teaching. *Frontiers in Education*, 7, 1045067
- Quintero, J. M. (2020). *I think I can; I know I can: Self-efficacy as an indicator of learner self-satisfaction with the learning experience in an online Master of Social Work program*. Dissertation submitted to Texas State University, San Marcos, USA
- Schweighofer, P., Weitlaner, D., Ebner, M., & Rothe, H. (2019). Influential factors for technology enhanced learning professionals' views: *Journal of Research in Innovative Teaching and learning*, 12(3), 268–294