

TEACHERS' DIGITAL COMPETENCIES FOR JOB EFFECTIVENESS IN PUBLIC SECONDARY SCHOOLS IN RIVERS STATE

BY

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Abstract

The paper investigated teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. Four research questions and four hypotheses were tested in the study. The design used for the study was descriptive survey design since the study is intended to draw a sample from a defined population while the sample will be used to draw inference about the population of the study. The population of the study consisted of all the 6, 956 teachers (3, 536 males and 3, 420 females) in the 23 Local Government Areas of Rivers State out of which 696 teachers (354 males and 342 females) which was 10% of the population was sampled for the study using stratified proportional sampling technique. The instrument adopted for data collection was a 20-item questionnaire titled "Teachers Digital Competence for Job Effectiveness Questionnaire" (TDCJEQ). The instrument had two Sections namely; Section A which contained items used to collect demographic data on the Teachers of the study while the Section B contained the questionnaire items which were responded to on a four point modified Likert scale of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD) with weighted scores of 4, 3, 2 and 1. The weights were added together $(4+3+2+1) = 10/4 = 2.50$ which was used as the criterion mean for agreeing or disagreeing with an item. The instrument was face and content validated by three Measurement and Evaluation experts in the University of Port Harcourt. The reliability index of the instrument was estimated using Cronbach alpha statistics and yielded a reliability coefficient of 0.87. The questionnaire was administered by the researcher with the aid of five trained research assistants and out of the 696 copies of questionnaire administered, 688 copies (351 males and 337 females) which represented a 98.9% retrieval rate which was adequate for the study. The research questions were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance. The findings of the study showed that teachers in public secondary schools possess problem solving digital skill but lack other digital competencies such as digital safety, digital content creation., digital literacy and digital communication and collaboration for job effectiveness. It was recommended that teachers should be trained on regular basis on different areas of digital competence for effective job performance in the school.

Keywords: Teachers' Digital Competencies, Job Effectiveness, Public Secondary School, Rivers State

Introduction

The world is gradually becoming a singly globalized village and the influence of technology is also felt in the school system like every other formal organization. The growth in technology has also increased the demand of relevant stakeholders from the duties carried out by teachers. Teachers are expected to be technologically compliant so as to be able to adequately manage human and material resources at their disposal for the attainment of educational goals and objectives. Teachers who are not technologically or digitally competent are perceived as being ineffective and unable to contribute to the 21st century goals and objectives of the school system. Teachers digital competencies are therefore essential for their job effectiveness for the attainment of educational goals and objectives in the 21st century school system.

In today's school environment, there are series of challenges that have made it difficult for teachers and students to converge in the same environment. This includes the recent COVID-19 pandemic, cases of insecurity, flooding, kidnapping among others. The need for developing alternative methods of teaching and learning such as virtual method of instruction is becoming ever necessary. However, teachers cannot switch to this new platform without acquiring the needed digital competence to operate these electronic platforms. Teachers have a lot that can be done using the digital method of instruction such as planning of lessons, evaluation, holding of meetings among others. Teachers on this note need to get trained or re-trained in the adoption of these digital platforms of teaching and learning.

The competence develop in the use of digital method of teaching and learning depends on the availability and adequacy of digital tools at the disposal of the teacher. In addition to this, the teacher must ensure that they develop the needed skills for operating these devices. It is only when these conditions are satisfied that the teacher will be able to develop the needed competencies in the use of these platforms. Teachers need to be supported by relevant stakeholders such as the government and school administrators in the development of these competencies as the competencies development will be used for efficient and effective educational service delivery which will be in the interest of all education stakeholders and the nation at large in the long run. Adequate support must therefore be provided for the teacher by relevant authorities to ensure that these abilities are developed and when this support is provided, the academic and administrative responsibilities of the teacher can be better discharged for the benefit of all.

Statement of the Problem

The teaching profession is greatly becoming more complex more than it was in the stone age and the advancement in technology is making the demands of the teaching profession more complex. The duties which were mechanically carried out by the teacher in the past are now digitally executed and any teacher who fails to align with this digital change may likely be left out of the scheme of events in the teaching profession. It is only teachers who are digitally inclined that possess the relevant digital competencies that are able to meet the demands of the teaching profession in the 21st century school system. Unfortunately, teachers are lagging behind in terms of acquisition of requisite digital competencies when compared with teachers in other countries. It therefore remains uncertain whether the status of teachers' digital competencies is responsible for the existing level of ineffectiveness on the job. It is on this note that this study intends to investigate teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Objectives of the Study

The study investigated teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. Specifically, the study sought to:

1. identify the existing teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.
2. determine the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

3. examine the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.
4. ascertain the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Research Questions

The following research questions were raised and answered in the study:

1. What are the existing teachers' digital competencies for job effectiveness in public secondary schools in Rivers State?
2. What are the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State?
3. What are the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State?
4. What are the challenges to teachers' digital competencies for job effectiveness in public 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 teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.
2. There is no significant difference between the mean ratings of male and female Teachers on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.
3. There is no significant difference between the mean ratings of male and female Teachers on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.
4. There is no significant difference between the mean ratings of male and female Teachers on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Literature Review

Teachers' Digital Competencies

The concept of digital competencies means different things to different people. The central believe however is that anything digital has to do with the use of technology. It can literarily be said that digital competencies are the ability to use modern technology to carry out educational and non-educational activities. In their words, Ottestad *et al.*, (2014) stated that digital competence simply enables the teacher to foster students' digital skills through work with academic subject material. In a related manner, Cabero-Almenara *et al.*, (2020:2) quipped that when we talk about digital competencies, "different authors allude to those skills or abilities related with the use of technological tools for conducting their professional activity in the classroom". Digital competencies are therefore the specialty acquired in the use of available technology for carrying out one's duties at work.

Job Effectiveness

Teachers ability to discharge their responsibilities based on specification is a measure of their effectiveness (Egwu, 2015). Education researchers believe that job effectiveness is the ability to carry out educational responsibilities in line with expected outcomes. The teacher is only effective when he or she is able to discharge assigned responsibilities based on outlined expectations. On their part, Nedaee *et al.*, (2012) pointed out that effectiveness is built on goal achievement, systematic approach strategic factors and competitive values and it is this building blocks that determines whether the job of an individual or a teacher is effective or not.

Existing Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

The need for teachers to develop relevant competencies in different digital areas has been an issue of concern to education administrators in recent times. Teachers are expected to build digital competencies in different aspects of teaching and other non-educational areas in order to improve on their job effectiveness and contribute to the success of the school system. Supporting the need for competencies, Sillat *et al.*, (2021:402) stated that “while the concept of digital competence was once considered mainly to comprise skills related to computer use, today the concept refers to a wider sense of knowledge, skills, and attitudes that are largely affected by the labor market”. Teachers today develop and utilize digital competencies not only for teaching such as knowledge, skill and attitude management with the students but also for non-teaching activities such as counselling and discipline.

Furthermore, Sillat *et al.*, (2021:404) stated that “digital competency, ICT literacy, digital literacy, ICT skills, digital skills, computer skills, technology literacies, digital competencies, 21st century skills” are all basic requirements needed for effective job delivery. The digital competencies of teachers must include ability to solve problems with digital devices, communicate and collaborate, digital safety, information and data literacy and data content creation (Tsankov & Damyanov, 2019). The combination of all of these competencies make it easy for teachers to deliver an effective service in school.

Effects of Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

The willingness or otherwise to build digital competence among teachers has various implications on their level of effectiveness on the job. Building relevant digital competence in the 21st century classroom has positive effects and the failure to build such competence also has negative effects. Educational scholars have established that part of the effects of building digital competence is that strong emphasis is placed on developing the ability to select, share, and generate digital material (Moreno, *et al.*, 2020). This implies that when teachers develop relevant digital competencies, a lot of educational activities can be effectively discharge with relevant goals and objectives achieved.

The continual use of digital resources contributes significantly to the promotion of digital Innovativeness. This implies that as people continue to use digital tools, they are able to uncover more efficient ways of putting these resources to use. In a related manner, teachers' digital literacy is greatly enhanced when teachers familiarize with digital resources and develop competencies in their usage. Similarly, information management ability is also developed from making use of digital resources and this makes it easy to build efficiency in the use of digital tools on their job.

Strategies for Improving Teachers' Digital Competence for Job Effectiveness in Public Secondary Schools in Rivers State

Overcoming these impediments will require proactive and corrective action from both the government and other critical education stakeholders. The lack of digital devices must be given adequate attention so that the issue of access can be adequately dealt with as this is the first step towards achieving requisite digital competence. Teachers should be provided access to relevant digital resources that will help promote effectiveness on the job. There is also the need for teachers to be adequately trained to be able to make use of emerging technological devices for carrying out assigned responsibilities. This will go a long way in promoting the effectiveness of the teacher on the job when these digital resources are deployed in all aspects of teaching and other non-educational activities.

Challenges to Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

Several factors limit the ability of teachers to build required digital competence in their various areas of service delivery. Some of these factors may be personally or organizationally induced but have the capacity of slowing down teachers' digital competencies development process. Supporting this assertion,

Qoura (2020) noted that the lack of relevant infrastructure often makes it difficult for teachers to develop digital competence in schools. This is coupled with the fact that majority of these schools lack internet services which makes digital competence more meaningful and result-oriented. Furthermore, the lack of elementary skills needed for operating digital tools often make it difficult for teachers who develop digital interest and to venture into its usage in relevant areas. There also seem to be the problem of lack of incentives both from the government and school administrators which is needed to build the interest of teachers to switch from the traditional method of job performance to a more digitally inclined one. In the same way, teachers and the society at large also show the wrong attitude towards the use of modern technology and this has slow down the process of digital competence on the job.

Empirical Reviews

Several empirical studies have been carried out by researchers to establish how teachers' digital competence is of importance to their job effectiveness and one of such studies was carried out by Korucu *et al.*, (2015) on examination of the digital competence of teacher candidates in terms of different variables and the outcome of the study indicated that the digital competence awareness and the technical access levels of both male and female teacher candidates was high while the digital competence and motivation levels were close to low. Study by Vukčević *et al.*, (2021) on research of the level of digital competencies of students of the University "Adriatic" Bar also showed that there were high percentages in all competencies investigated especially in participation in digital communities and networks, communication. The findings of the study also established that students had the least digital competencies in the field of programming and creating digital content or problem solving using various digital technologies, especially in competencies related to creativity and solving software or hardware problems. In another dimension, Jarad and Shaalan (2020) also carried out another study on assessment of digital competence of employees and teaching staff at the Technical College of Management, Kufa and it was revealed in the outcome of the study that there was a fair level of digital competence that is reflected in the lack of creating a stimulating environment for employees to use digital competence, and this negatively affects work improvement and development. Sani and Musa (2019) also carried out a study on the influence of ICT competencies on job performance among library personnel in tertiary institutions in Lokoja, Kogi State, Nigeria. The result of the study showed that the level of ICT competence of library staff significantly enhanced their job efficacy and performance.

On the other hand, Ong'ong'a (2021) investigated teachers' perception, experiences, and challenges about teens of ages 12-14 years who have reported online digital insecurity in Kenya and the outcome showed that teachers lack online safety competency skills to protect teens. Lindfors *et al.*, (2021) investigated the conditions for professional digital competence and found out that policy and training issues limited the success of the professional digital competence process. Røkenes and Krumsvik (2014) also carried out a study on the development of student teachers' digital competence in teacher education and it was shown that educating teachers on professional use of ICT for their future use in school and classroom teaching in secondary education was essential. Tusiime *et al.*, (2019) also conducted a study on developing teachers' digital competence: Approaches for Art and Design teacher educators in Uganda and found out that continuous professional development and pre-service training are essential for the development of teachers' digital competence in Uganda. The contribution of teachers' digital competence on job effectiveness across all levels of education hence cannot be overemphasized.

Methodology

The design used for the study was descriptive survey design since the study is intended to draw a sample from a defined population while the sample will be used to draw inference about the population of the study. The population of the study consisted of all the 6, 956 teachers (3, 536 males and 3, 420 females) in the 23 Local Government Areas of Rivers State out of which 696 teachers (354 males and 342 females) which was 10% of the population was sampled for the study using stratified proportional sampling

technique. The instrument adopted for data collection was a 20-item questionnaire titled “Teachers Digital Competence for Job Effectiveness Questionnaire” (TDCJEQ). The instrument had two Sections namely; Section A which contained items used to collect demographic data on the Teachers of the study while the Section B contained the questionnaire items which were responded to on a four point modified Likert scale of Strongly Agreed (SA), Agreed (A), Disagreed (D) and Strongly Disagreed (SD) with weighted scores of 4, 3, 2 and 1. The weights were added together $(4+3+2+1) = 10/4 = 2.50$ which was used as the criterion mean for agreeing or disagreeing with an item. The instrument was face and content validated by three Measurement and Evaluation experts in the University of Port Harcourt. The reliability index of the instrument was estimated using Cronbach alpha statistics and yielded a reliability coefficient of 0.87. The questionnaire was administered by the researcher with the aid of five trained research assistants and out of the 696 copies of questionnaire administered, 688 copies (351 males and 337 females) which represented a 98.9% retrieval rate which was adequate for the study. The research questions were answered using mean and standard deviation while the hypotheses were tested using z-test at 0.05 level of significance.

Results

Answer to Research Questions

Research Question One: What are the existing teachers’ digital competencies for job effectiveness in public secondary schools in Rivers State?

Table 1: Mean and standard deviation scores on the existing teachers’ digital competencies for job effectiveness in public secondary schools in Rivers State

S/No	Item	Male Teachers n=351			Female Teachers n=337		
		Mean	SD	Remark	Mea n	SD	Remark
1	Problem solving ability	2.64	0.96	Agreed	2.69	0.87	Agreed
2	Communication and collaboration	2.52	0.98	Agreed	2.45	0.97	Disagreed
3	Digital Content creation	2.44	0.99	Disagreed	2.47	0.97	Disagreed
4	Digital safety	2.47	0.97	Disagreed	2.40	1.01	Disagreed
5	Information and data literacy	2.40	1.01	Disagreed	2.43	0.98	Disagreed
	Grand Mean	2.49	0.98	Disagreed	2.48	0.96	Disagreed

Table 1 showed the responses of the male teachers to items 1, 2, 3, 4 and 5 as 2.64, 2.52, 2.44, 2.47 and 2.40 while the female teachers responded to the same set of items with mean scores of 2.69, 2.45, 2.47, 2.40 and 2.43. All of the items above the criterion mean score of 2.50 were agreed such as items 1 and 2 from the male teachers as well as item 1 from the female teachers while the other items were below the criterion mean score of 2.50 and as such were disagreed. The grand mean of 2.49 from the male teachers and 2.48 from the female teachers implied that they both disagreed on the existing teachers’ digital competencies for job effectiveness in public secondary schools in Rivers State.

Research Question Two: What are the effects of teachers’ digital competencies for job effectiveness in public secondary schools in Rivers State?

Table 2: Mean and standard deviation scores on the effects of teachers’ digital competencies for job effectiveness in public secondary schools in Rivers State

S/No	Item	Male Teachers n=351			Female Teachers n=337		
		Mea n	SD	Remark	Mean	SD	Remark
6	Promotion of innovativeness	2.77	0.93	Agreed	2.70	0.86	Agreed
7	Improvement of digital attitude	2.71	0.96	Agreed	2.72	0.85	Agreed
8	Enhancement of digital literacy	2.82	0.90	Agreed	2.87	0.79	Agreed
9	Improvement of interpersonal relations	2.84	0.89	Agreed	2.89	0.78	Agreed
10	Information management	2.85	0.88	Agreed	2.76	0.84	Agreed

Grand Mean	2.80	0.91	Agreed	2.79	0.82	Agreed
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In Table 2, the male teachers responded to items 6, 7, 8, 9 and 10 with mean scores of 2.77, 2.71, 2.82, 2.84 and 2.85 while the female teachers responded with mean scores of 2.70, 2.72, 2.87, 2.89 and 2.76. All of the items from the both teachers had mean scores above the criterion mean score of 2.50 used for decision making and as such were agreed. The grand mean score of 2.80 from the male teachers and 2.79 from the female teachers also suggested that they agreed on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Research Question Three: What are the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State?

Table 3: Mean and standard deviation scores on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State

S/No	Item	Male Teachers n=351			Female Teachers n=337		
		Mean	SD	Remark	Mean	SD	Remark
11	Regular digital training	2.91	0.84	Agreed	2.87	0.79	Agreed
12	Increasing access to digital devices	2.88	0.88	Agreed	2.92	0.76	Agreed
13	Enactment of digital policy	2.83	0.90	Agreed	2.82	0.81	Agreed
14	Technological innovations	2.79	0.92	Agreed	2.80	0.82	Agreed
15	Provision of digital support	2.81	0.90	Agreed	2.75	0.84	Agreed
	Grand Mean	2.84	0.89	Agreed	2.83	0.80	Agreed

Table 3 showed the responses of the male teachers to items 11, 12, 13, 14 and 15 as 2.91, 2.88, 2.83, 2.79 and 2.81 while the responses of the female teachers produced mean scores of 2.87, 2.92, 2.82, 2.80 and 2.75. These various items were all above the criterion mean score of 2.50 used for decision making and as such implied that they were agreed. The grand mean score of 2.84 from the male teachers and 2.83 from the female teachers also supported the position that the teachers both agreed on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Research Question Four: What are the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State?

Table 4: Mean and standard deviation scores on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State

S/No	Item	Male Teachers n=351			Female Teachers n=337		
		Mean	SD	Remark	Mean	SD	Remark
16	Regular digital skill changes	2.89	0.88	Agreed	2.91	0.76	Agreed
17	Lack of digital tools	2.99	0.82	Agreed	2.97	0.74	Agreed
18	Attitude of users to digital platforms	2.84	0.90	Agreed	2.79	0.82	Agreed
19	Lack of internet service	2.82	0.91	Agreed	2.88	0.79	Agreed
20	Lack of incentives for digitalization	2.74	0.93	Agreed	2.73	0.85	Agreed
	Grand Mean	2.86	0.89	Agreed	2.85	0.79	Agreed

Table 4 indicated the responses of the male teachers to items 16, 17, 18, 19 and 20 as 2.89, 2.99, 2.84, 2.82 and 2.74 while the responses of the female teachers to the same set of items were 2.91, 2.97, 2.79, 2.88 and 2.73. The various items from both teachers had mean scores that were above the criterion mean score of 2.50 and as such implied that the items were agreed while the grand mean score of 2.86 from the male teachers and 2.85 from the female teachers also upheld the assertion that the teachers both agreed on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Test of Hypotheses

Hypothesis One: There is no significant difference between the mean ratings of male and female Teachers on teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Table 5: z-test analysis of no significant difference between the mean ratings of male and female Teachers on teachers' digital competencies for job effectiveness in public secondary schools in Rivers State

Variable	N	df	Mean	SD	z-cal.	z-crit.	Level of Significance	Remark
Male Teachers	351	686	2.49	0.98	0.14	1.96	0.05	H ₀ was not rejected
Female Teachers	337		2.48	0.96				

Table 5 showed that the value of z-cal. of 0.14 was less than the value of z-crit. of 1.96 at 0.05 level of significance and 686 degrees of freedom. Since the value of z-cal. of 0.14 was less than the value of z-crit. of 1.96, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female teachers on teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Hypothesis Two: There is no significant difference between the mean ratings of male and female Teachers on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Table 6: z-test analysis of no significant difference between the mean ratings of male and female Teachers on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State

Variable	n	df	Mean	SD	z-cal.	z-crit.	Level of Significance	Remark
Male Teachers	351	686	2.80	0.91	0.15	1.96	0.05	H ₀ was not rejected
Female Teachers	337		2.79	0.82				

Table 6 revealed that the value of z-cal. of 0.15 was less than the value of z-crit. of 1.96 at 0.05 level of significance and 686 degrees of freedom. Since the value of z-cal. of 0.15 was less than the value of z-crit. of 1.96, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female teachers on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Hypothesis Three: There is no significant difference between the mean ratings of male and female Teachers on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Table 7: z-test analysis of no significant difference between the mean ratings of male and female Teachers on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State

Variable	n	df	Mean	SD	z-	z-	Level of Significance	Remark
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				cal.	crit.	
Male Teachers	351	2.84	0.89			H ₀ was not rejected
	686			0.16	1.96	
Female Teachers	337	2.83	0.80		0.05	

Table 7 showed that the value of z-cal. of 0.16 was less than the value of z-crit. of 1.96 at 0.05 level of significance and 686 degrees of freedom. Since the value of z-cal. of 0.16 was less than the value of z-crit. of 1.96, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female teachers on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Hypothesis Four: There is no significant difference between the mean ratings of male and female Teachers on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Table 8: z-test analysis of no significant difference between the mean ratings of male and female Teachers on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State

Variable	n	df	Mean	SD	z-cal.	z-crit.	Level of Significance	Remark
Male Teachers	351		2.86	0.89				H ₀ was not rejected
		686			0.16	1.96	0.05	
Female Teachers	337		2.85	0.79				

Table 8 indicated that the value of z-cal. of 0.16 was less than the value of z-crit. of 1.96 at 0.05 level of significance and 686 degrees of freedom. Since the value of z-cal. of 0.16 was less than the value of z-crit. of 1.96, the null hypothesis was not rejected indicating that there was no significant difference between the mean ratings of male and female teachers on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State.

Discussion of Findings

Existing Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

The responses from the male and female teachers showed that they both disagreed on the existing teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. Furthermore, the study showed that there was no significant difference between the mean ratings of male and female teachers on teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. This finding negates the outcome of a similar study conducted by Korucu *et al.*, (2015) on examination of the digital competence of teacher candidates in terms of different variables which indicated that the digital competence awareness and the technical access levels of both male and female teacher candidates was high while the digital competence and motivation levels were close to low.

The teachers revealed in their responses that they only possessed problem solving skills using digital techniques. Other areas of digital competencies such as data safety, digital content creation among others were lacking and this has great implication on the job of the teacher. This finding points to the fact that teachers digital competencies need to be improve upon to avoid a decline in the job effectiveness of teachers which will affect educational goal attainment adversely.

Vukčević *et al.*, (2021) on research of the level of digital competencies of students of the University "Adriatic" Bar also showed that there were high percentages in all competencies investigated especially in participation in digital communities and networks, communication. The findings of the study also established that students had the least digital competencies in the field of programming and creating

digital content or problem solving using various digital technologies, especially in competencies related to creativity and solving software or hardware problems.

Effects of Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

The findings of the study indicated that the teachers agreed on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. Similarly, it was shown that there was no significant difference between the mean ratings of male and female Teachers on the effects of teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. This finding agrees with a related study carried out by Sani and Musa (2019) on the influence of ICT competencies on job performance among library personnel in tertiary institutions in Lokoja, Kogi State, Nigeria which revealed that the level of ICT competence of library staff significantly enhanced their job efficacy and performance.

The teachers agreed that digital competencies are essential for building quality interpersonal relationships, promoting innovativeness and improving on digital literacy. The adoption of digital techniques in teaching hence has great effect not only on the job of the teacher but also on all education related issues in the school as well as other education stakeholders and this agree with the position of the study by Jarad and Shaalan (2020) which showed that there was a fair level of digital competence that is reflected in the lack of creating a stimulating environment for employees to use digital competence, and this negatively affects work improvement and development. Therefore, the failure to build teachers digital competencies have great implication on the teacher and the teaching responsibility.

Strategies for Improving Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

The findings of the study indicated that the teachers agreed on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. Furthermore, it was revealed that there was no significant difference between the mean ratings of male and female Teachers on the strategies for improving teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. This result is similar to the outcome of the study carried out by Røkenes and Krumsvik (2014) on the development of student teachers' digital competence in teacher education which revealed that educating teachers on professional use of ICT for their future use in school and classroom teaching in secondary education was essential.

This study has been able to substantiate the fact that regular training of teachers and providing access to digital devices were fundamental to building digital competencies. This also relates with the position of the outcome of the study by Tusiime *et al.*, (2019) which revealed that continuous professional development and pre-service training are essential for the development of teachers' digital competence in Uganda. In addition to this, the teachers agree that there is need for providing digital incentives as well as digital support as this will enable the teachers bridge the existing digital divide across all levels and improve on job effectiveness.

Challenges to Teachers' Digital Competencies for Job Effectiveness in Public Secondary Schools in Rivers State

The result of the study showed that the teachers agreed on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. The study also showed that there was no significant difference between the mean ratings of male and female Teachers on the challenges to teachers' digital competencies for job effectiveness in public secondary schools in Rivers State. This result is in tandem with the result of a related study conducted by Ong'ong'a (2021) on teachers' perception, experiences, and challenges about teens of ages 12-14 years who have reported online digital insecurity in Kenya which showed that teachers lack online safety competency skills to protect teens.

In their responses, the teachers indicated that lack of digital tools as well as absence of a digital policy hinder their digital competence. This is similar to the findings of the study by Lindfors *et al.*, (2021) which found out that policy and training issues limited the success of the professional digital competence process in the study area. The government as well as its regulatory agencies must therefore be sincere with the intention to bridge the digital divide through appropriate legislation and resource provision.

Conclusions

The study concludes as follows:

The responses from the data collected from the respondents of the study showed that there was no significant difference in the digital competencies of male and female teachers and how it relates to their job effectiveness in public secondary schools in Rivers State. This implies that male and female teachers in the school do not differ in their level and approach to digital competence as a necessity for their job effective. The respondents both hold the same stand as it relates to how the issue of digital competencies affect their job effectiveness.

Similarly, the teachers in public secondary schools sampled for the study showed that they possessed problem solving digital skill that is needed for job effectiveness. However, it was also revealed that they lacked other digital competencies such as digital safety, digital content creation., digital literacy and digital communication and collaboration for job effectiveness. This means that the teachers are only competent in problem solving but require assistance in other areas of digital competence.

Implications to Education

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

The lack of competence in areas of digital competence such as digital content creation, digital literacy, digital communication and collaboration calls for immediate training of teachers in the building of capacity in digital competence. This means that without adequate assistance and training in these regards, these schools and the teachers in particular will not be able to benefit from the digital investment effort of the government in these schools.

Furthermore, the need for digital support in terms of provision of digital tools for teachers also become important by virtue of the findings of this study. This is because teachers are more likely to develop competencies in areas where they are assisted. This means that with the right support, teachers can also engage in personal development and improve on their digital competencies for effectiveness on the job.

Recommendations

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

1. There is need for teachers training by the government on various aspects of digital competencies which will improve on their job effectiveness and contribute to educational goal attainment.
2. School administrators should ensure that teachers responsibilities in the school are digitalized to improve on job effectiveness and contribute to better educational outcomes.
3. The government should provide adequate financial support to secondary schools to provide the needed resources for improving on teachers' digital competence for job effectiveness and educational goal attainment.
4. The government should enact digital policies that will ensure that teachers and other school stakeholders are more digitally inclined to meet up with the 21st century technology driven education system.

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