DIGITAL SKILLS POSSESSED BY SECONDARY SCHOOL TEACHERS FOR EFFECTIVE INSTRUCTIONAL DELIVERY

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Abstract
The study focused on upscaling teachers' digital skills for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State for global competitiveness. The study was guided by three research questions and three null hypotheses were tested. The population of the study was all 544 (218 males and 326 females) teachers in senior secondary schools in Umuahia Education Zone of Abia State. The sample of the study was 218 (87 males and 131 females) teachers drawn from senior secondary schools in Umuahia Education Zone of Abia State using simple random sampling technique. The instrument for data collection was structure questionnaire developed by the researcher and validated by three experts. The reliability of the instrument was 0.76 obtained using Cronbach Alpha. The data collected were analysed using mean and standard deviation and t-test to test the hypotheses at 0.05 level of significance. The findings of the study revealed that; teachers did not possess adequate computer appreciation, power point preparation and presentation and internet skills for instructional delivery in senior secondary schools. Based on the findings, it was recommended that Government of Abia State through the Ministry of Education should provide teachers with adequate training to upscale their computer appreciation, power point preparation/presentation and internet skills for effective instructional delivery in senior secondary schools in Abia State.

Keywords: Teachers, Digital skills, Instructional delivery, Computer appreciation, PowerPoint presentation, Internet Global Competitiveness.

Introduction

Education is the bedrock and vehicle for the development of any nation. It is a fulcrum of any societal change that will ever occur. Education involves the transmission of society's cultural heritage, societal values, norms, indigenous knowledge, and technology from one generation to another to enhance expected future change (Otakpo, Wike, & John-Nelson, 2020). This explains why one of the national education goals involves the acquisition of useful skills and development of mental, physical, and social abilities and competences as equipment for the individual to live and contribute to the development of the society (Federal Republic of Nigeria, FRN, 2014).

However, Secondary education is the form of education which learners receive after primary education and before the tertiary stage (FRN, 2014). Therefore, the goals of secondary school education in Nigeria cannot be achieved unless teachers have necessary training where they are adequately equipped with knowledge, necessary teaching skills and digital skills. McDiarmid and Clevenger-Bright (2018)

tells us that a teacher is a person who helps others to acquire knowledge, competencies, or values. In essence, a teacher plays an immeasurable role in ensuring that the learners at all levels of education acquire desirable knowledge which can enhance their development as individuals and that of the economy. This implies that there is need for teachers' development regarding the use of digital skills and resources as a means to bridge the knowledge gap in teaching different concepts using diverse digital tools, facilities and equipment. Therefore, the need for the continual development of digital skills and resources among teachers cannot be overemphasized in the modern times.

According to Thokozani, Sylvia, and Moses (2019), the digital world is increasingly penetrating the education space, with digital technology gradually being used as a vehicle to deliver educational knowledge and skills in new and innovative ways. The need for upscaling teachers' skills in using digital resources as means to bridge the knowledge gap in the teaching and learning process in secondary schools is of utmost importance in this 21st century. Skill is perceived as the ability to carry out a task effectively. Mbah and Umurhurhu (2016) defined a skill as the ability to make purposeful movements that are necessary to a particular task. Digital skills, as defined by Asli (2022) are those skills needed to use digital devices, communication applications, and networks to access and manage information from basic online searching and emailing to specialist programming and development. According to United Nations Educational, Scientific and Cultural Organization (UNESCO, 2018), digital skills refer to a range of abilities to use digital devices, communication applications, and networks to access and manage information. Digital skills enable people to create and share digital content communicate, collaborate, and solve problems for effective and creative self-fulfilment in life, learning, work, and social activities at large.

In this study teachers' digital skills refer to the ability to utilize trending technological devices in carrying out different instructional activities for quality teaching and learning activities and for the achievement of instructional objectives and educational goals by extension. Fernando (2021) identified some digital skills, that could be possessed by teachers to include: computer appreciation, Internet, programming, Web, App development, and content creation, among others. Onyebuenyi and Oluka (2022) added that these digital skills involve a range of skills, which include computer appreciation, power point preparation and presentation, digital communication, digital creativity, and internet skills. It is therefore imperative that teachers possess strong digital skills that enable sound technology integration and utilization for effective instructional delivery. A teacher who possesses strong digital skills may share and monitor knowledge utilizing a variety of digital tools and applications with students. This implies that to ensure that teachers are digital equip there is need to upscale teachers' digital skills.

Up-scaling represents deliberate efforts to improve the knowledge and skills possessed by the teachers for enhancing their effectiveness. Up-scaling teachers digital skills is bound to increase their quality and ensure better lesson planning, instructional delivery and student learning outcomes (Perlman,Winthrop & Mcchivney,2016). Computer appreciation skills can be described as the ability's individuals develop that make them capable of operating and using the computer efficiently in performing basic operations like starting a computer, using the mouse, managing various windows among others. (Emmanuel, 2022). The computer appreciation skills of teachers include the ability to connect basic computer components, boot computer switch on the accessories and use the keyboards and mouse efficiently.

PowerPoint presentations can be regarded as a good instructional medium and a key for facilitating an effective teaching and learning process (Amosa, Hamdalat & Sherifat, 2018). PowerPoint is becoming more and more widespread as a teaching tool among teachers who wish to integrate multimedia technology into their teaching. The sheer popularity of this presentation tool comes from the belief that representation of information using auditory and visual inputs improves learning (Abubakar, Muhammad, Umar & Mahmud, 2020). PowerPoint skills include the ability to prepare and incorporate visual and auditory content, make changes to the lessons by editing or text modification, removal of existing slides and addition of new slides to make lesson more organized and flexible and finally use printout materials

for students' personal use along with the Internet. The use of the Internet in gathering instructional materials also requires skills on the part of teachers. The Internet is a computer-based global information system (Offia & Isaac, 2021). According to Muendo (2020), the Internet provides students and teachers the opportunities to communicate with one another through zoom cloud application and WhatsApp technologies thereby providing a quicker and easier access to more extensive and current information necessary to enhance instructional delivery.

Instructional delivery embraces all human interactive skills employed by the teacher to promote/facilitate learning in the classroom situation thereby leading to improved performance on the part of a learner (Chukwunyere, 2015). It is also a process of logically presenting instructions in line with the subject theme to the students (Ogwunte & Amadi, 2020). This means that teachers at all levels of education with adequate skills can play the decisive role in pivoting the direction of the instructional activities to equip learners for global competitiveness. Global competitiveness refers to the phenomenon where the borders separating countries are disappearing which allows the flow of science, technology, engineering, mathematics, economy, knowledge, people, values, and idea across borders. However, bridging the global competitive gap through teachers may partly depend on the content of their training programme for equipping trainee teachers with worldwide knowledge and skills needed for global competiveness (Uka & Oleabhiele, 2022). Since all teachers, both male and female require adequate training and skills to function effectively, it is important to conduct this study to ascertain the level of digital skills possessed by teachers for effective instructional delivery.

Statement of the Problem

The skills possessed by teachers are essential for contemporary educational development of any nation in the 21st century. This is because when the teachers are equipped with the 21st century skills (digital skills) for instructional delivery, it can accelerate, enrich, deepen, motivate, and engage students to learn. Unfortunately, the majority of teachers in public secondary schools in Nigeria and Abia State inclusive do not take advantage of technological tools for lesson planning and preparation as well instructional delivery due to lack of basic digital skills such as computer appreciation, power point preparation and Internet skills among others. Instead, they prefer to use conventional educational materials like textbook alone at this global age where current and useful materials are available on the internet. This can be a major contributory factor to the poor performance of students in internal and external examination in the country.

The phenomenon of poor performance of students in internal and external examinations has become a source of worry to both parents and educational authorities including teachers where students engage in different forms of examination malpractices and miracle centres where they provided with the answers during external examinations as well as writing their examination by proxy to record good performance. This ugly trend has become a source of worry among stakeholders. The problem of this study, therefore, is that whereas ample utilization of digital tools by teachers has the capacity to improve performance of students' digital skills possessed by teachers for effective use of the tools is not clearly known. The solution to this precarious problem has motivated the authors to carry out this present study on digital skills possessed by secondary school teachers for effective instructional delivery in Abia State.

Purpose of the Study

The central purpose of the study was to examine the level of digital skills possessed by secondary school teachers for effective instructional delivery in Abia State. Specifically, the study sought to determine:

1. the computer application skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.
2. the PowerPoint presentation skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

3. the Internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Research Questions

The following research questions guided the study.

Research Question 1: What are the computer application skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State?

Research Question 2: What are PowerPoint presentation skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State?

Research Question 3: What are the Internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State?

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

Research Hypothesis 1: There is no significant difference between the Mean ratings of male and female teachers on computer application skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Research Hypothesis 2: There is no significant difference between the Mean ratings of male and female teachers on PowerPoint presentation skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Research Hypothesis 3: There is no significant difference between the Mean ratings of male and female teachers on Internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Methods

Research Design

This present study adopted a descriptive survey research design. This research design is regarded as a non-experimental approach, that produces an accurate representation of participants, events or situations (Robson, 2002). This research design also involves a structured collection of data through the use of questionnaire from a sizable population (Saunders, Lewis & Thornhill, 2007).

Participants and Sampling Procedure

The population of the study was all the 544 teachers (218 males and 326 females) in the area of study. A simple random sampling technique was used to draw 218 teachers (87 males and 131 females) for the study.

Research Instrument

The instrument for data collection was a structured questionnaire, titled: “Digital skills possessed by secondary school teachers for effective instructional delivery”.

Validation and Reliability of Instrument

The instrument was validated by three experts, two in Business Education and one in Measurement and Evaluation. The reliability of the items in the instrument yielded a coefficient value of 0.76, using Cronbach’s alpha statistic.

Data Collection and Analysis

The data collected from the participants with the help of some research assistants were analysed using Mean, Standard Deviation and t-test. Mean and Standard Deviation were employed to answer the research questions and t-test were employed to test the null hypotheses at a 0.05 level of significance.

Decision on the research questions based on the cluster mean score in real limit value of numbers to answer the questions relation to the real limits of numbers on a four-point scale as Little Possessed (LP) 1.00 – 1.49, Moderately Possessed (MP) 1.50 – 2.49, Greatly Possessed (GP) 2.50 – 3.49 and Very Greatly Possessed (VGP) 3.50 – 4.00. The hypotheses of no significant difference were upheld where the t-calculated value is less then t-table value and otherwise rejected.

Results

Answering Research Questions and Testing Null Hypothesis

Research Question 1: What are the computer application skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State?

Table 1: Mean and Standard Deviation on the Computer Application Skills Possessed by Secondary School Teachers for Effective Instructional Delivery Based on Gender.

		Male		Female				
S/N	**Items**	$\bar{X}_1$	SD_1	$\bar{X}_2$	SD_2	$\bar{X}g$	SDg	**Remarks**
1.	Ability to boot computer and switch on the accessories.	3.09	0.96	3.02	0.89	3.05	0.92	Possessed
2.	Ability to connect basic computer components.	3.14	0.92	3.08	0.88	3.11	0.90	Possessed
3.	Ability to use the computer keyboards/mouse efficiently.	3.22	1.32	2.18	1.25	2.22	1.28	Not Possessed
4.	Ability to install computer programmes and software.	2.38	1.28	2.30	1.27	2.34	1.27	Not Possessed
5.	Ability to store and retrieve documents in the computer for instructional activities.	2.30	1.36	2.23	1.29	2.26	1.32	Not Possessed
6.	Ability to open programmes from the start menu.	3.08	0.92	3.06	1.01	3.07	0.96	Possessed
7.	Ability to close the file or folder after use.	3.05	0.93	2.98	1.24	3.01	1.08	Possessed
8.	Ability to shut down computer after use.	3.25	0.86	3.20	0.97	3.22	0.91	Possessed
9.	Ability to disengage computer and accessories from power supply.	3.29	0.75	3.24	1.02	3.26	0.88	Possessed
	Cluster mean	2.86	1.05	2.80	0.97	2.83	0.99	Possessed

Note. X_1=Male Teachers, X_2= Female Teachers, Xg=Grand Mean.

Table 1 showed that computer appreciation skills possessed by teachers for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State have the Mean scores ranging from 3.02 to 3.29. Meanwhile, items 3, 4, and 5 had the mean scores ranged from 2.18 to 2.44 and Standard Deviation of 1.25 to 1.36 respectively, which indicated that three items of computer appreciation skills were not possessed by teachers. However, the cluster Mean of 2.83 and Standard Deviation of 0.99 revealed that the respondents were not far from each other in their responses and from Mean.

Research Hypothesis 1: There is no significant difference between the Mean ratings of male and female teachers on computer application skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Table 2: t-test Analysis of the Differences between Male and Female Teachers on Computer Application Skills Possessed for Effective Instructional Delivery in Senior Secondary Schools in Umuahia Education Zone of Abia State.

Variables	$\bar{X}$	SD	N	df	t-calculated	t-tabulated	Decision
Male Teachers	2.86	1.05	87	216	0.42	1.96	Accepted
Female Teachers	2.80	0.97	131				

Note. $\bar{X}$ = Mean, SD = Standard Deviation, df = Degree of Freedom.

Table 2 showed that the calculated t-value is 0.42 while the t- critical value is 1.96 at 0.05 level of significant and at 216 degree of freedom. Since the calculated value is less than the t-critical value, the null hypothesis was accepted. Therefore, there is no significant difference between the Mean ratings of male and female teachers on computer application skills possessed for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State.

Research Question 2: What are PowerPoint presentation skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State?

Table 3: Mean and Standard Deviation on the PowerPoint Presentation Skills Possessed by Secondary School Teachers for Effective Instructional Delivery Based on Gender.

S/N	Item statement	Male X_1	Male SD_1	Female X_2	Female SD_2	Grand Xg	Grand SDg	Remark
10.	Ability to create a slide show.	2.41	1.34	2.35	1.26	2.38	1.30	Not Possessed
11.	Ability to insert lesson contents including graphs and charts in a slideshow.	2.45	1.29	2.39	1.22	2.42	1.25	Not Possessed
12.	Ability to add animations and transitions to make the instructional contents more enticing.	2.40	1.29	2.35	1.22	2.37	1.25	Not Possessed
13.	Ability to design the slideshows.	2.41	1.20	2.37	1.28	2.39	1.24	Not Possessed
14.	Ability to add background in a slideshow for effective presentation of instructional content.	2.34	1.27	2.31	1.23	2.32	1.25	Not Possessed
	Cluster Mean	2.40	1.27	2.35	1.24	2.37	1.25	Not Possessed

Note. X_1=Male Teachers, X_2= Female Teachers, Xg=Grand Mean.

Table 3 indicated the PowerPoint presentation skills possessed by teachers for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State. The Table

revealed that item 10 to 14 had their Mean scores ranging from 2.21 to 2.45 and Standard Deviation of 1.20 to 1.34 respectively. The Mean values of each items were below 2.50, which indicated that the five items were the PowerPoint presentation skills not possessed by teachers for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State. Meanwhile, the Grand Mean of 2.37 and Standard Deviation of 1.25 revealed that the respondents were not far from each other in their responses and from Mean.

Research Hypothesis 2: There is no significant difference between the Mean ratings of male and female teachers on PowerPoint presentation skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Table 4: t-test Analysis of the Differences between Male and Female Teachers on PowerPoint Presentation Skills Possessed for Effective Instructional Delivery in Senior Secondary Schools in Umuahia Education Zone of Abia State.

Variables	X	SD	N	df	t-calculated	t-tabulated	Decision
Male Teachers	2.40	1.27	87	216	0.29	1.96	Accepted
Female Teachers	2.35	1.24	131				

Note. $\overline{X}$ = Mean, SD = Standard Deviation, df = Degree of Freedom.

Table 4 indicated that the calculated t-value is 0.29 while the t- critical value is 1.96 at 0.05 level of significant and at 216 degree of freedom. Since the calculated value is less than the t-critical value, the null hypothesis was accepted. Therefore, there is no significant difference between the Mean ratings of male and female teachers on PowerPoint skills possessed for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State.

Research Question 3: What are the Internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State?

Table 5: Mean and Standard Deviation on the Internet Skills Possessed by Secondary School Teachers for Effective Instructional Delivery Based on Gender.

		Male		Female				
S/N	Items	X_1	SD_1	X_2	SD_2	Xg	SDg	Remarks
15.	Ability to download files from internet for teaching and learning.	3.06	0.89	2.98	0.83	3.02	0.86	Possessed
16.	Ability to save and organize files for various software applications.	2.44	1.36	2.40	1.31	2.42	1.33	Not Possessed
17.	Ability to subscribe to network of choice to acquire data bundle.	3.02	0.92	2.92	0.83	2.97	0.87	Possessed
18.	Ability to choose a suitable connection method to access the Internet.	2.48	1.31	2.45	1.28	2.46	1.29	Not Possessed
19.	Ability to use basic browser facilities for different browsers.	2.42	1.29	2.41	1.28	2.41	1.28	Not Possessed

20.	Ability to use the internet for basic research.	2.98	0.87	2.97	0.97	2.97	0.92	Possessed
21.	Ability to use Blogs and other forms of web communication; such as email, Polycom, online discussions.	2.44	1.28	2.42	1.33	2.43	1.30	Not Possessed
22.	Ability to use internet services such as: internet relay, chat, video conferencing to connect with students.	2.38	1.28	2.32	1.24	2.35	1.26	Not Possessed
	Cluster Mean	2.65	1.15	2.60	1.13	2.62	1.14	Possessed

Note. X_1=Male Teachers, X_2= Female Teachers, Xg=Grand Mean.

Table 5 showed the internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State. The Table revealed that items 15, 17, 20 and 21 had the Mean scores ranging from 2.60 to 3.06 and Standard Deviation of 0.83 and 0.97 respectively. The Mean values of each items were above 2.50, which indicated that the 4 items were possessed by teachers for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State. Also, items 18, 19, 21 and 22 had the Mean scores ranging from 2.32 and 2.48 and Standard Deviation of 1.24 and 1.36 respectively. The Mean values of each items were below 2.50, which indicated that the 4 items were not possessed by teachers for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State. Meanwhile, the Grand Mean of 2.63 and Standard Deviation of 1.14 revealed that the respondents were not far from each other in their responses and from Mean.

Research Hypothesis 3: There is no significant difference between the Mean ratings of male and female teachers on Internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State.

Table 6: t-test Analysis of the Differences between Male and Female Teachers on Internet Skills Possessed for Effective Instructional Delivery in Senior Secondary Schools in Umuahia Education Zone of Abia State.

Variables	X	SD	N	df	t-calculated	t-tabulated	Decision
Male Teachers	2.65	1.15	87	216	0.31	1.96	Accepted
Female Teachers	2.60	1.13	131				

Note. $\overline{X}$ = Mean, SD = Standard Deviation, df = Degree of Freedom.

Table 6 indicated that the calculated t-value is 0.31 while the t- critical value is 1.96 at 0.05 level of significant and at 216 degree of freedom. Since the calculated value is less than the t-critical value, the null hypothesis was accepted. Therefore, there is no significant difference between the Mean ratings of male and female teachers on Internet skills possessed for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State.

Discussions

The findings of the study on research question one revealed that the computer application skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of

Abia State includes the abilities to boot computer and switch on the accessories, connect basic computer components, open programmes from the start menu, close the file or folder after use shut down computer after use and disengage computer and accessories from power supply. Also, the corresponding hypothesis test indicated that there is no significant difference between the Mean ratings of male and female teachers on the computer appreciation skills possessed for effective instructional delivery in Umuahia Education Zone of Abia State. Consequently, this finding conforms to the study of Emmanuel (2022) who found that ICT skills such as computer appreciation skills are required by teachers to operate computer for the effective teaching of Basic Electronics. The finding also conforms to the study of Opie and Oko-Ngaji (2021) who found that the level of ICT competence of science teachers was significantly below the expected minimum competency level.

The findings of the study on research question two indicated that teachers did not possess PowerPoint presentation skills for effective instructional delivery in senior secondary schools in Umuahia Education Zone of Abia State. Also, the corresponding hypothesis test indicated that there was no significant difference between the Mean ratings of male and female teachers on PowerPoint presentation skills for effective instructional delivery in Umuahia Education Zone of Abia State. The finding is in harmony with the study of Onipede, Lawal, and Samuel (2020) who reported that teachers in senior secondary schools needed training in Power Point for efficient teaching in senior secondary schools in Ekiti State. Also, Mehari, David and Bernard (2020) found that majority of Biology teachers did not have sufficient computer skills to integrate ICT in teaching and learning practices.

The findings of the study on research question three revealed that the Internet skills possessed by secondary school teachers for effective instructional delivery in Umuahia Education Zone of Abia State includes the abilities to download files from internet for teaching and learning in physics, subscribe to network of choice to acquire data bundle and use the internet for basic research. Also, the corresponding hypothesis test indicated that there was no significant difference between the Mean ratings of male and female teachers on Internet skills for effective instructional delivery in Umuahia Education Zone of Abia State. The findings agree with the study of Obiekwe and Obadigie (2019) which revealed that principals of secondary schools in Anambra state need internet/networking competency for administrative effectiveness in secondary schools in Anambra State.

Conclusions

It was concluded that digital skills have globally become one of the strategies for enhancing instructional delivery in schools since it helps both students and teachers alike. Apart from enabling students to expand their learning possibilities, it also improves teacher efficiency, give teachers access to more information and allows teachers to modify their teaching techniques to suit the learning concepts to be taught. Consequently, the findings revealed that teachers possessed some computer appreciation skills, but did not possessed PowerPoint presentation skills and as such possessed some few Internet skills. Thus, training and retraining of teachers on digital skills are required to enhance effective instructional delivery in senior secondary schools in Abia State.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Government of Abia State through the Ministry of Education should endeavour to provide their teachers with adequate training to upscale teachers' digital skills on computer appreciation skills for effective instructional delivery in senior secondary schools.
2. Teachers should be given opportunity to participate in workshops programme to develop their proficiency in power point preparation and presentation skills for effective instructional delivery in senior secondary schools for global competitiveness.
3. There is need for teachers to avail themselves to acquire adequate skills on the use of Internet for effective instructional delivery in senior secondary schools for global competitiveness.

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