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Teachers' Perception of Digital Literacy Skills as a Tool for 21st Century Teaching in Nigeria

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Abstract

The study examined teachers' perception of digital literacy skills as a relevant tool for teaching in the 21st Century in Ilorin South Local Government Area of Kwara State. The descriptive research design was adopted. One research question and four research hypotheses were generated. The sampling technique was simple random sampling, selecting 200 teachers as respondents. The instrument used for data collection was a self-constructed questionnaire. Its reliability was determined using Cronbach's alpha with 0.85 co-efficient. Descriptive and inferential statistical tools were employed in answering and testing the generated research question and the hypotheses respectively, using mean and standard deviation, independent t-test and ANOVA. The findings showed that teachers perceived digital literacy skills as a relevant tool for teaching in the 21st Century; there is a significant difference in the perception of teachers towards digital literacy skills for teaching in the 21st century based on gender and age while there is no significant difference in the perception of teachers towards digital literacy skills for teaching in the 21st Century based on educational qualification and years of teaching experience in Ilorin South. Recommendations were made that school managements should further encourage teachers' digital literacy skills by organizing or sponsoring them to attend training on how to integrate e-learning tools into their classroom instructions; all age groups and both genders especially female teachers should be encouraged to acquire digital literacy skills among others.

Keywords: Teachers' perception, digital literacy skills, tools for teaching, the 21st century
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Introduction

Learners in the early 21st Century are continuously receiving information, communicating, viewing media, and using a myriad of technology-based tools. Therefore, teaching learners in a world of instant information is a challenge to educators. The use of the internet, smartphones, computers, tablets, gaming systems, and multimedia devices may be problematic to the education community. To correctly educate children to evaluate, interpret, and effectively use technology, teachers have to support technology, utilise technology in their classrooms, and teach proper use of technology to accomplish tasks. Hence, the place of digital literacy among teachers becomes imperative.

Digital literacy in Nigeria in the context of the United Nations Department of Economic and Social Affairs (UNESA) and Wiley DSGI respectively was ranked to be far from adequate (Isyaku & Nwokeocha, 2022; Okafor, 2023). To upscale the status of Nigeria in digital literacy, several ICT initiatives and implementation have been put in place among which are; the national ICT baseline study; the refocusing of the education trust fund of Nigeria to address teachers' ICT skills; review of pre-service teacher education curricula; and teacher capacity development initiatives. This is to say that, much confidence has been placed in the ability of the teachers to bridge the digital literacy gaps.

Despite these efforts, many teachers in Nigeria according to Okafor (2023) still lack the digital literacy skills and confidence to effectively integrate technology into their teaching practices. In 2021, the Universal Basic Education Commission (UBEC) reported that over 60% of teachers in Nigeria's public primary schools lack digital literacy. This, however, calls for a serious concern because those (teachers) who are to impart digital literacy to students are deficient themselves. It is therefore important to investigate the root cause of teachers' deficiency in digital literacy and skills. In addition, understanding the perception of teachers regarding digital literacy and skills is crucial for effective implementation of technology-enhanced teaching. This study, therefore investigated teachers' perception of digital literacy skills as a tool for 21st Century teaching. It also examined if gender, age, educational qualifications, and years of teaching experience influence teachers' perception of digital literacy skills as a tool for teaching in the 21st century. The study sought to answer the question: how do teachers perceive digital literacy skills as a relevant tool for teaching in the 21st century. The following hypotheses were postulated:

H_{01}: there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century between males and females.
H_{02}: there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on age.
H_{03}: there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on educational qualifications.
H_{04}: there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on teaching experience.

Theoretical Framework

In practical terms, digital literacy is the set of skills, knowledge, and attitudes required to access digital information effectively, efficiently, and ethically (Koehler & Mishra, 2009). It includes knowing how to evaluate digital information and how to use it in decision making. This study is

anchored on Technological Pedagogical Content Knowledge (TPACK) which is an educational model that describes the intersections between technology, pedagogy, and content for the effective integration of technology into teaching and learning. The Technological Pedagogical Content Knowledge (TPACK) framework is therefore considered very appropriate to teachers' perceptions of digital literacy skills because it emphasizes the integration of technology into teaching in a way that enhances learning.

According to Yue, *et al.*, (2024), teachers who understand and implement TPACK are more likely to perceive digital literacy as crucial because it directly influences their ability to effectively use technology in the classroom. In addition, teachers are equipped to understand the role of digital literacy in teaching and learning and boost their confidence and competency in using digital tools. Moreso, TPACK encourages teachers to design curricula that incorporate digital tools. Additionally, it helps teachers to adapt to new and emerging technologies as well as try out innovations for effective teaching (Joo, *et al*., 2018). In general, the TPACK framework shapes how teachers perceive digital literacy by highlighting the importance of integrating technology with pedagogy and content knowledge,

Literature Review

Digital literacy represents a person's ability to perform tasks efficiently in a digital environment. The term 'digital' refers to information that is represented in a numeric form (Ilomäki, Paavola, Lakkala, & Kantosalo, 2016; Bejaković & Mrnjavac, 2020). Teachers are required to have the ability to understand and effectively utilise the information, media, and technology available. Omatseye *et al.*, (2022); Al-Alaoui, *et al.*, (2008); Heinrichs and Lim (2010) identified digital literacy as an effective 21st century tool for teaching beyond the four walls of the classroom. Okafor (2023) thus expressed that many teachers particularly in Nigeria are more comfortable with the traditional approach to teaching which usually takes place mainly within the classroom or school premises. Previous studies (e.g. Herman, 2017; Kholis & Azmi, 2023) differentiated the traditional approach from the 21st century teaching approach which employs digital skills and electronic communications to establish effective classroom practices.

Digital literacy skills have been identified to be particularly important because, in a global online environment, people participate and resources are created with various intentions and competencies involving critical thinking (Starkey, 2011). Digital literacy skills can support creativity in multiple ways, including developing ideas and creating or realising ideas (Loveless, 2007). Digital skills are relevant and highly required for problem-solving in an information-rich society. These skills offer multiple solutions to various problems, especially in cyberspace as well as in the classroom. These solutions may remain unrecognized if information handlers do not possess and apply the required skills. Hence, this study sought to unveil teachers' views about being digitally literate and its implication for classroom practices in the 21st Century as well as equip citizens to be functional members of a society that is steadily advancing in technology.

The benefits of digital literacy skills to individuals, national development and productivity cannot be overstretched. However, some factors have been identified to militate against the effective utilisation of ICTs in Nigerian educational settings. These factors according to Davidson and Ezeh (2023); Ejiroghene (2021); Jegede (2019); Onah (2018); Adomi and Kpangban (2010) include high costs of technology devices such as computers and their

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accessories, epileptic power supply, limited or poor internet connection, lack of the requisite skills, that is, digital literacy skills by teachers to fully utilise technology in the curriculum implementation, inadequate funding of IT related programs in schools, lack of relevant software for content creation and effective teacher-student communication, as well as inadequate infrastructural facilities.

Teachers are said to be nation builders and this implies that the better-equipped teachers are professional, the more prosperous the nation becomes. It is therefore important to invest in teachers irrespective of their variations. A study by Korkmaz (2020) found that the digital literacy levels of male classroom teachers were higher than their female counterparts. Also, a previous study by Onasanya *et al.*, (2011) examined the level of awareness and utilisation of ICT by teachers in Oyo state, Nigeria. It was revealed that there was a significant difference between the male and female science teachers in their level of utilisation of ICTs, with the male out-performing their female counterparts.

Another study by Ong and Lai (2006) also found that males had more positive attitudes towards e-learning than females. These outcomes may likely be a result of the feminine gender characteristics. However, Karavidas, *et al.,* (2005) in the study found that women have a higher level of digital anxiety than men. As a result, men are more successful than women in digital literacy skills. On the contrary, Öcal (2017) found that all primary school teachers felt very sufficient in terms of digital literacy. In other words, there was no difference in the male and female perceptions of digital literacy. However, he further revealed that the digital literacy level of primary school teachers decreased as their ages increased and this was corroborated by Korkmaz (2020). This indicates that teachers' age tends to reduce teachers' motivation and drive toward digital literacy skills and tools needed for teaching in the 21st century.

According to Jenni and Beardon (2009), teachers must possess computer literacy skills to effectively integrate technology into teaching. The authors said that teachers' educational qualifications play a significant role in shaping their perception and practical use of digital literacy skills for classroom instruction. This variance in qualifications, exposure and engagement with digital tools may impact a teacher's proficiency and confidence in utilizing technology for instructional purposes, leading to varied levels of technological integration in the classroom.

Teachers' years of experience in the classroom have been identified by Brandenburg, McDonough, Burke, and White (2016) as a factor that influences their productivity. They asserted that there is a tendency to presume a straightforward linear relationship between teachers' years of experience and the quality of teaching. Contrary to this, there is a generation variation between the early career teachers (digital natives) and the experienced or older teachers (digital immigrants). The former often time displays higher digital literacy skills because they are more skilled at using technology intuitively in their daily activities while the latter develops these skills over time through professional development and supportive environments. Tomczyk (2020) however expressed that the number of years a teacher has been in the classroom may not necessarily influence their perception of digital literacy as a necessary skill for 21st-century teaching.

Without a doubt, teachers are a great force to reckon with in the process of teaching and learning and their impacts are everlasting. Understandably, teachers employed diverse pedagogical skills before the advent of digital aids. Despite substantial development of digital technologies, a good number of teachers still find it difficult to integrate digital literacy skills in

the classroom. Some prior studies (e.g., Mudra, 2020; Pratolo & Solichati, 2021; Alfia *et al.,* 2020) corroborate that some teachers still find it hard to incorporate digital tools into their teaching exercise effectively due to lack of operational skills or other infrastructural-related factors.

Kaymakamoglu (2018) added that it may be difficult for teachers who are accustomed to the use of traditional teaching methods to quickly transition to a digital approach to teaching. Findings from a study by Omatseye, *et al.,* (2022) corroborated the assertion that teachers find it difficult to integrate ICT into classroom teaching. Ertmer *et al.,* (2012) however opined that while educational technology is becoming more user-friendly, there are some challenges related to digital innovation and implementation in the classroom. To surmount these problems, determination, commitment, and the right attitude to digital literacy and competence are required on the part of the teachers. Hence the need to investigate teachers' perception of digital literacy skills as a relevant tool for teaching in the 21st century was prompted.

Methodology

This study adopted descriptive research design because it provides a comprehensive, systematic and accurate representation of the population being studied. Moreover, it provides a clear and concise summary of the data collected to gain insights and understand trends in teachers' perception of digital literacy skills as a tool for teaching in the 21st Century. The population of the study comprises all teachers Primary school teachers in Kwara State while the target population of the study consists of nine hundred and ninety-five (995) public primary school teachers in Ilorin South Local Government Area in Kwara State. A simple random sampling technique was used to select two hundred (200) teachers from twenty (20) primary schools, selecting ten (10) teachers from each school. A researcher-designed questionnaire titled "Teachers' Perception of Digital Literacy Skills as a Relevant Tool for Teaching (TPDLSRTT)" was used to collect data from the respondents. The instrument was divided into Sections A and B. Sections A elicited information on the demographic data of the respondents, while Section B gathered information on teachers' perceptions of digital literacy skills as a relevant tool for teaching in the 21st Century. The items in Section B were measured on a four-point Likert scale response of SA (Strongly Agree), A (Agree), D (Disagree), and SD (Strongly Disagree).

The instrument was subjected to face and content validity which was carried out by experts in educational technology. The reliability of the instrument was subjected to test-retest reliability, by administering the questionnaire to 20 primary school teachers who were not part of the respondents for the study. It was administered twice, with an interval of two weeks. The data gathered from the reliability test was analysed using Cronbach alpha, and the reliability coefficient was 0.85, which was adjudged reliable enough for this study. To participate in the study, the consent of the selected school management and teachers was sought. Thereafter, TPDLSRTT was administered to the respondents and the completed questionnaires were retrieved. The data collected was analysed using the descriptive statistical tools of mean and standard deviation, to answer the research questions while the inferential statistical tools of independent t-test and One-Way ANOVA were used to test the hypotheses at a p-value of 0.05.

Results

Research Question 1: How do teachers perceive digital literacy skills as a relevant tool for teaching in the 21st Century?

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In answering this research question, mean responses of the teachers' choice on each item on the questionnaire that assessed teachers' perception of digital literacy skills as a relevant tool for teaching in the 21st century was calculated using the Grand Mean .5 as the cut-off. The output of the analysis reveals thus:

Table 1: Teachers' perception of digital literacy skills as a relevant tool for teaching in the 21st century

S/N	ITEMS	$\overline{X}$	SD
1.	Digital literacy skills give the opportunity to locate information online	3.56	.498
2.	It gives the opportunity to provide instructional resources to the classroom without necessarily looking for the real object	3.09	.794
3.	It creates opportunity for teachers to give assignments online and for students to also submit the assignments online	3.05	.791
4.	It makes teaching and learning easy as it is interesting and aids quick assimilation of contents of lessons	3.05	.810
5.	It creates opportunities to teach and learn through online platforms like Zoom, WhatsApp and others	3.45	.518
6.	It promotes online communication with pupils and their parents	3.46	.538
7.	It gives the opportunity to save information, such as test scores, online.	3.53	.511
8.	It gives room for assessment via educational online platforms	3.48	.549
9.	Attendance of class participants can be stored and retrieved easily online	3.50	.521
10.	It enhances teachers' computer literacy	3.53	.530
11.	When teachers implement digital literacy in the classroom, it helps keep students engaged in their schoolwork	3.46	.556
12.	Digital literacy in the classroom allows students to express their ideas and discoveries in inventive ways	3.51	.540
13.	It creates more opportunities for collaboration between teachers and learners, and also among learners	3.47	.592
14.	It prepares teachers for future opportunities such as educational research and analysis	3.54	.529
15.	Teachers can use digital literacy in nearly every subject area, which serve as an aid to effective teaching	3.41	.541
16.	Engaging digital literacy in the classroom improves teachers and pupils' creativity level	3.47	.566
17.	It makes teaching and learning possible outside the four walls of the classroom	3.49	.521
18.	It gives the opportunity to construct strategies for locating information, apply and communicate it	3.07	.827
19.	Digital literacy also teaches digital responsibility, which is the ability to consume and communicate information ethically online	2.99	.776
20.	It gives the opportunity to construct strategies for locating information, apply and communicate it	2.64	1.028
Grand Mean		**3.06**	

Results in Table 1 revealed that most of the respondents perceived digital literacy skills as a relevant tool for teaching in the 21st Century. This is made evident by the mean value of most of the items in Table 2 above, which is higher than 3.06, which is the grand mean score. Specifically, 'digital literacy skills give the opportunity to locate information online' had the highest mean score of 3.56. This result suggests that digital literacy skills assist teachers in locating relevant information for their teaching activities in the 21st Century. More so, the results in Table 2 also show that 'digital literacy skills enhance teachers' computer literacy', 'digital literacy skills give teachers opportunity to save information online, such as test scores', and 'digital literacy skills prepare teachers for future opportunities such as educational research and analysis', had high mean scores between 3.51 and 3.54, which are above the grand mean score of 3.06. These results indicate that teachers perceived digital literacy skills as a very relevant tool for teaching in the 21st Century in Ilorin South, Nigeria.

Testing the Hypotheses

Four research hypotheses were formulated, and were tested with the use of independent t-test and Analysis of Variance (ANOVA) at a significant level of 0.05.

$H0_1$: There is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century between male and female.

In testing this research hypothesis, a T-test statistical tool was used at 0.05 level of significance. The output of the analysis reveals thus:

Table 2: Independent T-test analysis showing the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century

Gender	N	X	SD	DF	Cal. Value	P. value	Decision	
Male	71	67.65	4.369					
				198	0.007	0.004	**Rejected**	
Female	129	66.14	2.957					

Table 2 reveals that the p-value of 0.004 is less than the significance level of 0.05. Hence, the null hypothesis is rejected ($0.004 < 0.05$). Thus, there is a significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on gender in Ilorin South.

HO_2: There is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on age.

In testing this research hypothesis, the ANOVA statistical tool was used at 0.05 level of significance. The output of the analysis reveals thus:

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Table 3: ANOVA results on the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on age

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	142.417	5	28.483			
Within Groups	2417.458	194	12.461	2.286	.048	**Rejected**
Total	2559.875	199				

Table 3 reveals that the p. value of 0.048 is less than the significance level of 0.05. Hence, the null hypothesis is rejected (0.048 < 0.05). This means that there is a significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on age in Ilorin South.

HO_3: There is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on teaching qualification.

In testing this research hypothesis, the ANOVA statistical tool was used at 0.05 level of significance. The output of the analysis reveals thus:

Table 4: ANOVA results on the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on educational qualification

	SD of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	80.105	3	26.702			
Within Groups	2479.770	196	12.652	2.110	.100	**Not Rejected**
Total	2559.875	199				

Table 4 revealed that the p. value of 0.100 is greater than the significance level of 0.05. Hence, the null hypothesis is not rejected (0.048 > 0.05). This means that there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on educational qualifications in Ilorin South.

H_{04}: there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century based on educational qualification.

In testing this research hypothesis, the ANOVA statistical tool was used at 0.05 level of significance. The output of the analysis reveals thus:

Table 5: ANOVA results on the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century based on teaching experience

	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Between Groups	87.035	4	21.759			
Within Groups	2472.840	195	12.681	1.716	.148	Not Rejected
Total	2559.875	199				

Table 5 revealed that the p. value of 0.148 is greater than the significance level of 0.05. Hence, the null hypothesis is not rejected (0.148 > 0.05). This means that there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century based on teaching experience in Ilorin South.

Discussion of the Findings

From the research study, it was revealed that teachers perceived digital literacy skills as a relevant tool for teaching in the 21st Century in Ilorin South. This finding aligns with some previous studies that identified digital literacy (Omatseye et al., 2022; Al-Alaoui, *et al.,* 2008; Heinrichs & Lim, 2010) as an effective 21st century tool for teaching beyond the four walls of the primary classroom. Nevertheless, Abazie (2021) observed that ICT skills have become a requirement for social inclusion in the 21st Century. Hence, teachers and students need to acquire these skills. Adeniyi-Egbeola, *et al.,* (2021) noted that some 21st Century teachers find it difficult to teach with practical skills. However, as researchers have suggested, this technology-driven world requires teachers and students to be proficient in many areas, if not in all (Chase & Laufenberg, 2011). Interestingly, Omatseye, *et al.,* (2022) found that 21st-century teachers now possess the basic computer literacy and digital literacy required for teaching and learning. Digital literacy skills are similar to those proposed in the notion of the 21st Century skills. These are the skills that teachers need to use software or operate a digital device. They are dynamic, involving a continual effort to keep up with new technologies and practices.

The study revealed that there is a significant difference in the perception of male and female teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century in Ilorin South. In support of this, Korkmaz (2020) found that the digital literacy levels of male classroom teachers were higher than the digital literacy levels of female classroom teachers. Karavidas *et al.,* (2005) also revealed that women have a higher level of digital anxiety than men and men are more successful than women in digital skills. A previous study (e.g. Onasanya *et al.,* 2011) also examined how much teachers in Oyo state, Nigeria were aware of and utilised information and communication technology. Their findings showed that the level of science teachers' utilisation of ICT resources for teaching science and health education was very low and there exists a significant difference between the male and female science teachers in their level of utilisation of ICTs, with the male out-performing their female counterparts. This shows that the gender of teachers, as a variable, has the potential to determine disparity in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century.

Furthermore, the study outcome revealed that there is a significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century based on age in Ilorin South. In a similar study, Öcal (2017) found that primary school

teachers felt very sufficient in terms of digital literacy. In his study, he did not see any difference in digital competence perceptions depending on gender, but he found that the digital literacy levels of primary school teachers decreased as their ages increased. Korkmaz (2020) found that as the age of classroom teachers increased, their digital literacy levels decreased. This indicates that teachers' age tends to determine their perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century.

The findings also revealed that there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century based on educational qualifications in Ilorin South. This disagreed with Jenni and Beardon (2009) who opined that teachers require computer literacy skills to be able to use technology effectively in teaching. They believe teachers have different perceptions of digital literacy skills based on their different educational qualifications, which exposes them to different engagements requiring digital literacy skills.

Also, the findings revealed that there is no significant difference in the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st Century based on teaching experience in Ilorin South. Tomczyk (2020) did not detect a significant difference between school teachers' digital literacy skills. This is an indication that teachers' teaching experience may not necessarily determine the perception of teachers towards digital literacy skills as a relevant tool for teaching in the 21st century based on teachers' teaching experience.

Implication of the Study

The findings of the study can inform teaching practices that better improve student digital literacy skills, which can help prepare them for success in an increasingly digital world. It can provide insight that assists teachers in improving their instructional practices and keeping pace with the demands of the 21st-century education. The findings could also inform school-wide initiatives for technology integration and digital literacy skill development, bringing about more effective teaching and learning environments.

The study could contribute to a better understanding of the gaps in digital literacy skills among teachers and students, which could inform policy decisions related to educational technology, curriculum development, and teacher training. It could also provide a foundation for future research to explore digital literacy skills in teaching across different subject areas, grade levels, and cultural contexts, as well as the long-term impact on student learning and teacher efficacy.

Conclusion

The study carried out showed that public primary school teachers have a positive perception of digital literacy skills as a relevant tool for teaching; teachers' perceptions were observed to be significantly different based on their gender and age; and it was also revealed that teachers perceived digital literacy skills as a relevant tool for teaching in the 21st Century differently based on educational qualification and teaching experience in Ilorin South LGA. This shows that digital literacy skills are undeniably relevant, and teachers should, therefore, be encouraged to acquire the skills to achieve effective teaching and learning processes.

Recommendations

- School management should further encourage teachers' digital literacy skills by organizing and sponsoring them to attend training on how to integrate e-learning tools into classroom instructions.
- Digital literacy skills should be acquired by both male and female teachers and not to be perceived as skills to be possessed by male teachers alone.
- Teachers across all ages should be encouraged to acquire the necessary digital literacy skills that will boost their teaching activities.
- Irrespective of teachers' educational qualifications and years of teaching experience, school management should ensure that all teachers participate in Digital literacy workshops and seminars

References

Abazie, G. A. (2021). Digital literacy and utilization of ict resources for teaching and learning amongst secondary school teachers in Anambra State, Nigeria: Implications amidst Covid-19 Pandemic.*Journal of Education and Practice*, 12(21), 61-75.

Adeniyi-Egbeola, F. O., Achike, K. J., & Bello, Y. (2021). Teachers' knowledge and practices in using digital literacy in enhancing communicative competence in the English as a second language class. *Journal for Language Teaching*, *55*(1), 37-55.

Adomi, E. E., & Kpangban, E. (2010). Application of ICTs in Nigerian secondary schools. *Library philosophy and practice*, 1.

Al-Alaoui, M., Ohannessian, M. I., Choueiter, G. F., Akl, C., Avakian, T., Al-Kamal, I., & Ferzli, R. (2008). A pilot project from illiteracy to computer literacy: Teaching and learning using information technology. *International Journal of Emerging Technologies in Learning*, 3(3), 4-9

Alfia, N., Sumardi, S., & Kristina, D. (2020). Digital native students' perceived competence on digital literacy: A study of digital native students at a private Islamic Junior High Boarding School. *Aksara*, *21*(1), 360995.

Bejaković, P., & Mrnjavac, Ž. (2020). The importance of digital literacy on the labour market. *Employee Relations: The International Journal*, *42*(4), 921-932.

Brandenburg, R., McDonough, S., Burke, J., & White, S. (2016). Teacher education research and the policy reform agenda. *Teacher education: Innovation, intervention and impact*, 1-14.

Chase, Z. & Laufenberg, D. (2011). Digital literacies: Embracing the squishiness of digital literacy. *Journal of Adolescent & Adult Literacy*, 54(7), 535-537.

Davidson, C., & Ezeh, G. C. (2023). Challenges facing the use of ICT in teaching computer studies in public secondary schools in Awka South LGA. *AfricArXiv*.

Ejiroghene, E. R. (2021). Introduction of ICT In Nigerian Secondary Schools. *Library Philosophy & Practice*.

Ertmer, P.A., Ottenbreit-Leftwich, A., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education*, 59, 423-435

Heinrichs, J. H., & Jeen-Su, L. (2010). Information literacy and office tool competencies: A benchmark study. Journal of Education for Business, 85(3), 153-164.

Herman, H. A. (2017). *The effects of literacy support tools on the comprehension of informational e-books and print-based text*. Widener University.

Ilomäki, L., Paavola, S., Lakkala, M., & Kantosalo, A. (2016). Digital competence: An emergent boundary concept for policy and educational research. *Education and Information Technologies*, *21*, 655-679.

Isyaku, K. & Nwokeocha, S. (2022). Nigeria's effort towards promoting digital literacy. Proceedings of the IADIS International Conference on e-Democracy, Equity and Social Justice, pp. 33-40.

Jegede, D. (2019). Challenges facing the administration of ICT infrastructural facilities in public primary schools in Nigeria. *Electronic Research Journal of Engineering, Computer and Applied Sciences*, 1,30-40.

Jenni, W. & Beardon, T. (2009). Learning and teaching with ICT in ICT and primary mathematics, McGrawHill Education, Open University press.

Joo, Y. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: Tpack, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society*, 21(3),48–59. *JSTOR*, http://www.jstor.org/stable/ 26458506. Retrieved 8th July, 2024.

Karavidas, M., Lim, N. K., & Katsikas, S. L. (2005). The effects of computers on older adult users. *Computers in Human Behavior*, *21*(5), 697-711.

Kaymakamoglu, S. E. (2018). Teachers' beliefs, perceived practice and actual classroom practice in relation to traditional (teacher-centered) and constructivist (learner-centered) teaching (note 1). *Journal of Education and Learning*, *7*(1), 29-37.

Kholis, A., & Azmi, U. (2023). A Need analysis on developing English interactive multimodal e-book oriented to 21st century skills. *Elsya: Journal of English Language Studies*, *5*(1), 85-106.

Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1). https://citejournal.org/volume-9/issue-1-09/general/what-is-technological-pedagogicalcontent-knowledge

Korkmaz, M. (2020). Determining the digital literacy levels of classroom teachers (Master's thesisEskisehir Osmangazi University).

Loveless, A. (2008). new technology. *creative*, 61.

Mudra, H. (2020). Digital literacy among young learners: how do EFL teachers and learners view its benefits and barriers? *Teaching English with Technology*, *20*(3), 3-24.

Okafor, O. (2023). Bridging the digital literacy gap in Nigerian schools: Challenges and solution. Retrieved from https://medium.com/@prechy/bridging-the-digital-literacy-gap-in-nigerian-schools-challenges-and-solutions-e22ab65190b7

Öçal, F. N. (2017). Perceptions of digital literacy competence related to primary school teacher and parents themselves with their children. *Unpublished master's thesis), Gazi University Graduate School of Educational Sciences, Ankara*.

Omatseye B.O., Osagiobare O.E., Ekwukoma V., & Nyorere O.I. (2022.). *Education and contemporary challenges in Nigeria: A book of readings*. University of Benin Press. (pp. 132 -141).

Onah, N. J. (2018). P*erception of junior secondary school students on difficulties in learning computer studies in Enugu East Local Government Area, Enugu State* (Doctoral dissertation, Godfrey Okoye University Ugwuomu-Nike, Enugu).

Onasanya, S. A., Shehu, R. A., Ogunlade, O. O., & Adefuye, A. L. (2011). Teacher's awareness and extent of utilization of information communication technologies for effective science and health education in Nigeria. *Singapore Journal of Scientific Research*, 1(1), 49–58. https://journals.co.za/doi/abs/10.10520/EJC135757

Ong, C. S., & Lai, J. Y. (2006). Gender differences in perceptions and relationships among dominants of elearning acceptance. *Computers in Human Behavior*, 22(5), 816–829. https://doi.org/10.1016/j.chb.2004.03.006.

Pratolo, Bambang, Widi., Solikhati, Hana, Amri. (2021). Investigating teachers' attitude toward digital literacy in EFL classroom. *Journal of Education and Learning Edulearn.* 15(1),97-103. ISSN: 2089-9823 DOI: 10.11591/edulearn.v15i1.15747

Starkey, L. (2011). Evaluating learning in the 21st century: A digital age learning matrix. *Technology, Pedagogy and Education*, 20(1), 19–39.

Tomczyk, Ł. (2020). Skills in the area of digital safety as a key component of digital literacy among teachers. *Education and Information Technologies, 25*(1), 471-486.

Yue, M., Jong, M.SY. & Ng, D.T.K. (2024). Understanding K–12 teachers' technological Pedagogical content knowledge readiness and attitudes toward artificial intelligence education. *Education and Information Technology* (2024). https://doi.org/10.1007/s10639-024-12621-2