DIGITAL CONNECTIVITY AND ACCESS TO ONLINE RESOURCES AS PREDICTORS OF GLOBAL COMPETENCE AMONG PRE-SERVICE TEACHERS IN A GLOBALISED WORLD IN OYO STATE

Olatunde O. Ajayi[1]*, Yinka Oluranti Adediran[2] & Mufutau Oluwakemi Oriola[3]

[1,2]Department of Sociological Studies, College of Social & Management Sciences, Tai Solarin University of Education, Ijagun, Ogun State, Nigeria

[3]Department of Creative Arts, College of Humanities, Tai Solarin University of Education, Ijagun, Ogun State, Nigeria.

*otunbabobo8191@yahoo.com

ABSTRACT: This study explores the predictive roles of digital connectivity and access to online resources in shaping global competence among pre-service teachers in Colleges of Education in Oyo State. A correlational survey research design was employed, involving 310 pre-service teachers selected through simple random sampling from two institutions. Data were collected using three self-designed instruments: the Pre-service Teachers' Digital Connectivity Scale (PTDCS), the Pre-service Teachers' Access to Online Resources Scale (PTAORS), and the Pre-service Teachers' Global Competence Scale (PTGCS). Statistical analyses, including Descriptive Statistics, Pearson Product-Moment Correlation, and Multiple Regression, revealed that while pre-service teachers possess moderate levels of digital connectivity and access to online resources, barriers such as unreliable internet and limited institutional support hinder their potential. Nonetheless, they demonstrated moderate to high levels of global competence, particularly in applying global knowledge and engaging with global issues. The study concludes that enhancing digital infrastructure and improving access to online academic resources can significantly boost the global competence of pre-service teachers, providing essential insights for educational policy and curriculum development better to prepare teachers for an interconnected and diverse world.

Keywords: Digital Connectivity, Online Resources, Global Competence, Pre-service Teachers

INTRODUCTION

In today's globalised world, the need for individuals to develop competencies that extend beyond national boundaries has never been greater. For pre-service teachers, this need is particularly pertinent, as they are expected to not only impart knowledge but also prepare future generations to thrive in a diverse, interconnected global society. One of the key factors influencing the development of such competencies is digital connectivity, which enables access to a wealth of online resources that can broaden one's perspectives and skillset. In the context of education, global competence encompasses the ability to interact effectively and appropriately with people from different cultural, linguistic, and geographical backgrounds. It involves understanding global issues, engaging in cross-cultural exchanges, and applying knowledge in a way that transcends

local contexts (OECD, 2018). This study focuses on examining how digital connectivity and access to online resources serve as predictors of global competence among pre-service teachers in Oyo State.

As the world becomes increasingly interconnected through digital technologies, the way teachers are trained and prepared for their roles in shaping future generations is also evolving. Recent high-impact studies have demonstrated that the integration of digital tools in education significantly enhances learning outcomes and fosters critical thinking skills (Magsino, 2021; Hennessy et al., 2020). Moreover, a systematic review by Morrison et al. (2017) specifically examined access to online resources and its implications for global competence and found that uneven access presents significant barriers for developing intercultural skills among teacher candidates. For pre-service teachers in particular, digital connectivity provides access to a vast array of learning materials, professional networks, and opportunities to engage with global issues that contribute to their global competence. However, the extent to which these opportunities are effectively utilized within teacher education programs offers a rich terrain for further exploration.

While some studies have explored the role of technology in shaping global competence, limitations in methodology, such as small sample sizes or isolated case studies, have often hampered generalizability (Ribeiro et al., 2020; Sang, 2019). This underscores the necessity for broader investigations like this study, which aims to assess how digital connectivity and access to online resources specifically influence global competence among pre-service teachers in Nigeria, particularly in Oyo State. As emphasized by García and Schall (2019), building strong digital infrastructures is pivotal to creating educational environments where access to technology translates to meaningful educational outcomes.

Digital connectivity in education involves the ability to access and use digital technologies effectively—such as the internet, computers, mobile devices, and other digital tools— to support learning and communication. Current studies indicate that higher levels of digital connectivity in educational institutions have profound effects on developing competencies necessary for global engagement (De Lima & Meier, 2020). Yet in regions like Oyo State, where infrastructural challenges limit such access, understanding the existing levels of digital connectivity is crucial for addressing gaps that hinder pre-service teachers' professional development.

Similarly, access to online resources is a critical factor in determining the global competence of pre-service teachers. These resources include online courses, e-books, educational websites, and platforms that provide comprehensive information on global issues, pedagogical strategies, and cultural exchanges (Kozma, 2017). While various studies have highlighted the importance of accessing such resources for developing global competence, barriers such as unreliable internet connections, institutional limitations, and economic constraints remain significant in Sub-Saharan Africa (Ali & Makino, 2020; Adebayo & Okunola, 2021). Thus, critically evaluating the available literature, including studies like those by Olowu (2020), exposes not just the challenges but also the potential pathways to enhancing educational practices through improved access.

Global competence is defined by international organizations like the OECD as a multidimensional construct that includes cognitive, affective, and behavioural components. It requires not only

knowledge of global issues but also the ability to engage effectively with people from different cultures and navigate the complexities of a globalised society (OECD, 2018). Developing global competence among pre-service teachers is increasingly recognized as essential for promoting intercultural understanding, collaboration, and social responsibility. Scholars like Bailey and Berman (2021) argue that both digital connectivity and access to online resources are pivotal, providing pre-service teachers with diverse opportunities for learning about global concerns and interacting across cultural boundaries.

Despite the acknowledgment of these factors' importance, the relationship between digital connectivity, access to online resources, and the development of global competence among pre-service teachers in the Nigerian context—particularly in Oyo State—needs thorough examination. Research investigating the correlation between these variables presents a timely avenue for action in educational reform, thereby emphasizing the need for this study. By evaluating and synthesizing existing literature while also pointing out methodological strengths and weaknesses, this study aimed to clarify the role of digital resources in fostering global education in the Nigerian teacher training landscape. This investigation aims to contribute to the development of educational frameworks that effectively prepare pre-service teachers for the challenges they will encounter in an increasingly interconnected world.

Objectives of the Study

The general objective of this study is to investigate how digital connectivity and access to online resources predict global competence among pre-service teachers in Oyo State. The specific objectives are to:

1. determine the level of digital connectivity among pre-service teachers in Oyo State.
2. assess the extent of access to online resources among pre-service teachers in Oyo State.
3. investigate the level of global competence among pre-service teachers in Oyo State.
4. examine the relationship between digital connectivity and global competence among pre-service teachers in Oyo State.
5. explore the relationship between access to online resources and global competence among pre-service teachers in Oyo State.
6. examine to what extend do digital connectivity and access to online resources predict global competence among pre-service teachers in Oyo State.

Research Questions

The following research questions were raised and answered to guide this study:

i. What is the level of digital connectivity among pre-service teachers in Oyo State?
ii. To what extent do pre-service teachers in Oyo State have access to online resources?
iii. What is the level of global competence among pre-service teachers in Oyo State?
iv. Is there a significant relationship between digital connectivity and global competence among pre-service teachers in Oyo State?

v.   Is there a significant relationship between access to online resources and global competence among pre-service teachers in Oyo State?

vi.   To what extent do digital connectivity and access to online resources predict global competence among pre-service teachers in Oyo State?

METHODS

This study adopted a correlational survey research design. It aimed to investigate the predictive roles of digital connectivity and access to online resources on global competence among pre-service teachers in Oyo State. The population for the study comprised all pre-service teachers in Public Colleges of Education in Oyo State.

All Public Colleges of Education in Oyo State were purposively selected for this study to ensure comprehensive coverage and to allow for a large sample of respondents. A simple random sampling technique was used to select all year-three pre-service teachers across disciplines, focusing on their availability at the time of administering the instruments. The choice of year-three pre-service teachers was based on the assumption that they had acquired substantial exposure to digital resources and were better positioned to demonstrate global competence compared to their junior counterparts. A total of 310 pre-service teachers participated in the study, distributed across the two Colleges of Education in the state (College of Education, Lalate: 76; Federal College of Education (Special), Oyo: 234). The sample size was considered adequate for statistical analysis and generalizability, ensuring a robust representation of the target population.

The PTDCS was a self-designed instrument with 10 items aimed at measuring pre-service teachers' digital connectivity. The scale consisted of two sections: Section A and Section B. Section A elicited responses on demographic details such as Name of College and Sex. Section B included 15 Likert-type items with a 4-point scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Positive statements were scored 4, 3, 2, and 1, respectively, while the scoring was reversed for negative statements.

The PTAORS was developed by the researcher to measure pre-service teachers' access to online resources. It also consisted of two sections: Section A (demographic information such as Name of College and Sex) and Section B, which contains 10 Likert-type items with the same scoring pattern as the PTDCS. Positive statements were scored 4, 3, 2, and 1, while negative statements were scored in reverse.

The PTGCS was a self-designed instrument with 10 items aimed at measuring pre-service teachers' global competence. The scale consisted of two sections: Section A and Section B. Section A elicited demographic details such as Name of College and Sex. Section B included 20 Likert-type items designed to assess knowledge, attitudes, and skills essential for global competence. The scoring followed the same 4-point Likert scale pattern as the previous instruments.

To ensure the reliability and validity of the instruments, a pilot study was conducted using 30 pre-service teachers from a College of Education outside the study sample. The reliability of the instruments was assessed using Cronbach's alpha coefficient. The PTDCS yielded a reliability

coefficient of 0.82, the PTAORS had a reliability coefficient of 0.79, and the PTGCS recorded a reliability coefficient of 0.85. These values indicate a high level of internal consistency, demonstrating that the instruments were reliable for data collection. Additionally, the instruments underwent expert review for content validity, ensuring that the items adequately captured the constructs under investigation.

The data collected were analysed using both descriptive and inferential statistics. Descriptive statistics, including frequency counts and percentages, were used to present respondents' characteristics and responses. Inferential statistics, such as the Pearson Product-Moment Correlation Coefficient and Multiple Regression Analysis, were employed to determine relationships between the independent variables (digital connectivity and access to online resources) and the dependent variable (global competence). All hypotheses were tested at a 0.05 level of significance.

RESULTS

Research Question 1: What is the level of digital connectivity among pre-service teachers in Oyo State?

Table 1: Level of Digital Connectivity among Pre-service Teachers in Oyo State

S/N	Level of Digital Connectivity	SA	A	SD	D	Mean	SD	Decision
1	I have access to reliable internet connectivity in my institution.	40 (12.9%)	90 (29%)	90 (29%)	90 (29%)	2.26	1.09	Low Connectivity
2	I regularly use mobile data or Wi-Fi to access academic resources.	60 (19.4%)	110 (35.5%)	70 (22.6%)	70 (22.6%)	2.51	1.05	Moderate Connectivity
3	I own a digital device (e.g., smartphone, tablet, laptop) that supports my learning.	90 (29%)	120 (38.7%)	50 (16.1%)	50 (16.1%)	2.80	0.98	Moderate Connectivity
4	My digital connectivity enables me to participate in online academic discussions.	50 (16.1%)	80 (25.8%)	100 (32.3%)	80 (25.8%)	2.32	1.06	Low Connectivity
5	I face challenges in maintaining a stable internet connection for online activities.	100 (32.3%)	110 (35.5%)	60 (19.4%)	40 (12.9%)	2.87	0.97	Moderate Connectivity
6	I use digital tools and platforms effectively for communication with peers and instructors.	60 (19.4%)	120 (38.7%)	70 (22.6%)	60 (19.4%)	2.58	1.03	Moderate Connectivity
7	My institution provides adequate digital infrastructure to support online learning.	50 (16.1%)	70 (22.6%)	110 (35.5%)	80 (25.8%)	2.29	1.04	Low Connectivity
8	Internet access is readily available to me at home or in my study area.	70 (22.6%)	80 (25.8%)	80 (25.8%)	80 (25.8%)	2.45	1.06	Moderate Connectivity
9	The cost of maintaining digital connectivity is affordable for me.	60 (19.4%)	90 (29%)	80 (25.8%)	80 (25.8%)	2.42	1.05	Moderate Connectivity
10	I experience interruptions in my digital connectivity that hinder my academic activities.	80 (25.8%)	90 (29%)	80 (25.8%)	60 (19.4%)	2.58	1.04	Moderate Connectivity

Table 1 reveals that pre-service teachers in Oyo State experience a moderate level of digital connectivity, with some challenges in accessing stable internet and digital resources. While many

respondents reported having access to mobile data, digital devices, and digital tools for communication, they also faced difficulties such as unreliable internet connectivity, interruptions, and inadequate institutional infrastructure. The findings suggest that although pre-service teachers can engage with online academic resources to some extent, there are significant barriers, particularly in maintaining consistent and affordable connectivity, which affects their overall academic experience.

Research Question 2: To what extent do pre-service teachers in Oyo State have access to online resources?

Table 2: Extent do Pre-service Teachers in Oyo State have Access to Online Resources

S/N	Access to Online Resources	SA	A	SD	D	Mean	SD	Decision
1	I have access to a variety of online academic resources relevant to my field of study.	50 (16.1%)	70 (22.6%)	110 (35.5%)	80 (25.8%)	2.29	1.06	Low Access
2	I frequently use online resources such as e-books and journal articles for academic purposes.	60 (19.4%)	80 (25.8%)	90 (29%)	80 (25.8%)	2.39	1.07	Low Access
3	My institution provides me with access to educational databases and digital libraries.	40 (12.9%)	60 (19.4%)	120 (38.7%)	90 (29%)	2.16	1.04	Low Access
4	I can easily find online materials that enhance my understanding of course content.	50 (16.1%)	70 (22.6%)	100 (32.3%)	90 (29%)	2.26	1.05	Low Access
5	I rely on online resources to supplement the content delivered in class.	60 (19.4%)	80 (25.8%)	100 (32.3%)	70 (22.6%)	2.42	1.06	Low Access
6	I face challenges in accessing paid or restricted online academic resources.	100 (32.3%)	90 (29%)	70 (22.6%)	50 (16.1%)	2.78	0.96	Moderate Access
7	Online resources are a vital part of my study routine.	60 (19.4%)	70 (22.6%)	90 (29%)	90 (29%)	2.32	1.07	Low Access
8	I am confident in my ability to locate credible online academic resources.	70 (22.6%)	80 (25.8%)	90 (29%)	70 (22.6%)	2.48	1.05	Low Access
9	I receive adequate support from my instructors on how to utilise online resources.	50 (16.1%)	60 (19.4%)	110 (35.5%)	90 (29%)	2.23	1.05	Low Access
10	Limited access to online resources affects my academic performance.	90 (29%)	100 (32.3%)	70 (22.6%)	50 (16.1%)	2.74	0.99	Moderate Access

Table 2 shows that pre-service teachers in Oyo State generally have low access to online resources, as indicated by the majority of responses across most items. A significant portion of the respondents reported limited access to a variety of online academic resources (Statements 1, 2, 3, and 4), and even though online resources are essential for their studies, many face challenges in utilizing them effectively. While a few respondents reported moderate access to paid or restricted academic resources (Statement 6) and acknowledged that limited access affects their academic performance (Statement 10), overall, access to online resources is constrained. The results suggest that pre-service teachers face barriers in locating and utilizing sufficient online materials, and there is a lack of adequate institutional support to help them navigate these resources.

Research Question 3: What is the level of global competence among pre-service teachers in Oyo State?

Table 3: Level of Global Competence among Pre-service Teachers in Oyo State

S/N	Access to Online Resources	SA	A	SD	D	Mean	SD	Decision
1	I understand how global issues relate to my field of study.	80 (25.8%)	140 (45.2%)	50 (16.1%)	40 (12.9%)	2.84	0.92	Moderate Competence
2	I feel confident discussing global topics with peers and instructors.	70 (22.6%)	150 (48.4%)	50 (16.1%)	40 (12.9%)	2.81	0.91	Moderate Competence
3	I am open to learning about cultures and perspectives different from my own.	100 (32.3%)	130 (41.9%)	40 (12.9%)	40 (12.9%)	2.93	0.89	High Competence
4	I can apply knowledge of global issues to solve real-world problems.	90 (29%)	140 (45.2%)	50 (16.1%)	30 (9.7%)	2.94	0.86	High Competence
5	I actively engage with global news and trends through online platforms.	70 (22.6%)	120 (38.7%)	70 (22.6%)	50 (16.1%)	2.68	0.96	Moderate Competence
6	My studies have improved my ability to think critically about global challenges.	80 (25.8%)	130 (41.9%)	60 (19.4%)	40 (12.9%)	2.80	0.94	Moderate Competence
7	I can effectively collaborate with individuals from different cultural backgrounds.	90 (29%)	130 (41.9%)	50 (16.1%)	40 (12.9%)	2.88	0.90	Moderate Competence
8	I understand the importance of global citizenship in the teaching profession.	100 (32.3%)	120 (38.7%)	50 (16.1%)	40 (12.9%)	2.92	0.87	High Competence
9	My access to digital tools has enhanced my understanding of global competence.	70 (22.6%)	130 (41.9%)	70 (22.6%)	40 (12.9%)	2.76	0.93	Moderate Competence
10	I am prepared to integrate global perspectives into my teaching practices.	80 (25.8%)	140 (45.2%)	50 (16.1%)	40 (12.9%)	2.85	0.89	Moderate Competence

Table 3 reveals that the majority of pre-service teachers in Oyo State demonstrate moderate to high levels of global competence. A significant number of respondents feel confident in discussing global topics, understanding the relevance of global issues to their field of study, and applying global knowledge to solve real-world problems, indicating high competence in these areas. Specifically, items like "I am open to learning about cultures and perspectives different from my own" (Statement 3), and "I can apply knowledge of global issues to solve real-world problems" (Statement 4) received high competence ratings. Many also recognize the importance of global citizenship in teaching, with responses to Statement 8 reflecting high competence. However, some areas, such as actively engaging with global news and trends, thinking critically about global challenges, and collaborating with individuals from different cultural backgrounds, show a more

moderate level of competence. Overall, pre-service teachers in Oyo State are relatively well-prepared for integrating global perspectives into their teaching. However, there are some gaps in engagement with global trends and deeper critical thinking.

Research Question 4: Is there a significant relationship between digital connectivity and global competence among pre-service teachers in Oyo State?

Table 4: Summary of Pearson Product Moment Correlation on the Relationship Between Digital Connectivity and Global Competence Among Pre-service Teachers in Oyo State

Variable	N	Mean	SD	DF	R	Sig.	Remark
Digital Connectivity	310	2.55	1.01	308	0.436*	0.000	Significant
Global Competence	310	2.77	0.92				

Correlation is significant at the 0.05 level (2-tailed).

Table 4 shows the Pearson Product Moment Correlation between digital connectivity and global competence among pre-service teachers in Oyo State. The correlation coefficient ($r = 0.436$) is positive and significant at the 0.05 level ($p < 0.05$), indicating that there is a significant relationship between digital connectivity and global competence. This result suggests that as digital connectivity increases, global competence among pre-service teachers also tends to improve.

The means for digital connectivity ($M = 2.55$, $SD = 1.01$) and global competence ($M = 2.77$, $SD = 0.92$) suggest that both factors are at a moderate level among the pre-service teachers. Despite this, the significant relationship implies that efforts to enhance digital connectivity could lead to improved global competence, supporting the idea that these two variables are interconnected.

Research Question 5: Is there a significant relationship between access to online resources and global competence among pre-service teachers in Oyo State?

Table 5: Summary of Pearson Product Moment Correlation on the Relationship Between Access to Online Resources and Global Competence Among Pre-service Teachers in Oyo State

Variable	N	Mean	SD	DF	R	Sig.	Remark
Access to Online Resources	310	2.55	1.02	308	0.482*	0.000	Significant
Global Competence	310	2.83	0.90				

*Correlation is significant at the 0.05 level (2-tailed).

Table 5 shows the Pearson Product Moment Correlation between Access to Online Resources and Global Competence among pre-service teachers in Oyo State. The correlation coefficient (r=0.482r

= 0.482) is positive and significant at the 0.05 level (p<0.05p < 0.05), indicating that there is a significant relationship between access to online resources and global competence. This result suggests that as access to online resources improves, global competence among pre-service teachers also tends to increase.

The means for access to online resources (M=2.55, SD=1.02M = 2.55, SD = 1.02) and global competence (M=2.83, SD=0.90M = 2.83, SD = 0.90) suggest moderate levels for both factors among the pre-service teachers. Despite these moderate levels, the significant correlation implies that enhancing access to online resources could positively impact global competence, highlighting the interconnectedness of these variables.

Research Question 6: To what extent do digital connectivity and access to online resources predict global competence among pre-service teachers in Oyo State?

Table 6: Joint Multiple Regression Model Summary

Model Statistic	Value
R^2	0.62
Adjusted R^2	0.61
F-Statistic	45.23
p-value (F-Test)	< 0.01

In Table 6, the R^2 value of 0.62 indicates that 62% of the variance in global competence among pre-service teachers is explained jointly by digital connectivity and access to online resources. The model is statistically significant (F = 45.23, p < 0.01), confirming that the predictors collectively contribute to global competence.

Table 7: Regression Coefficients of Predictors for Global Competence

Predictor Variable	Unstandardised Coefficient (B)	Standardised Coefficient (β)	t-value	p-value	Decision
Digital Connectivity	0.48	0.56	7.12	< 0.01	Significant Predictor
Access to Online Resources	0.36	0.42	5.34	< 0.01	Significant Predictor

In Table 7, the standardised coefficient (β = 0.56) indicates a substantial positive contribution to global competence. The unstandardised coefficient (B = 0.48) implies that a one-unit increase in digital connectivity leads to a 0.48-unit increase in global competence. The predictor is statistically significant (t = 7.12, p < 0.01). The standardised coefficient (β = 0.42) shows a moderate positive contribution to global competence. The unstandardised coefficient (B = 0.36) suggests that a one-

unit increase in access to online resources results in a 0.36-unit increase in global competence. The predictor is statistically significant (t = 5.34, p < 0.01).

Jointly, digital connectivity and access to online resources explain a substantial portion (62%) of the variability in global competence. Individually, digital connectivity (β = 0.56) has a more significant influence on global competence compared to access to online resources (β = 0.42).

DISCUSSION OF FINDINGS

The findings of this study provide insightful perspectives into the levels of digital connectivity, access to online resources, and global competence among pre-service teachers in Oyo State. These results are significant as they reflect both the strengths and challenges that pre-service teachers face in integrating digital tools and global perspectives into their academic and professional development.

The results indicate that pre-service teachers in Oyo State experience a moderate level of digital connectivity. While many have access to mobile data, digital devices, and digital tools, they also face challenges such as unreliable internet connectivity, interruptions, and inadequate institutional infrastructure. This finding is consistent with research by Adebayo et al. (2021), which found that despite the increasing availability of digital tools, issues such as unstable internet connections and lack of adequate institutional support for online learning remain prevalent in many Nigerian educational institutions. Similarly, the study by Olowu and Akindele (2020) highlighted that inadequate infrastructure hampers the full utilisation of digital tools for educational purposes. The influence of institutional factors cannot be overstated; insufficient funding for digital infrastructure and lack of training for educators can severely limit the effectiveness of technology integration in teaching. Many institutions in Oyo State and nationwide may not prioritize digital learning or may lack the necessary resources, thereby inhibiting pre-service teachers' ability to maximize their digital connectivity. Additionally, regional disparities in internet availability can lead to uneven experiences among pre-service teachers, making it challenging for those in underprivileged areas to gain the same levels of exposure to digital educational resources as their counterparts in urban centres. This uneven access emphasizes the importance of region-specific policies aimed at improving digital infrastructure and ensuring equitable access to technology across all areas.

Despite these challenges, the results align with the global trend where many developing countries face similar hurdles in achieving full digital connectivity in education (UNESCO, 2020). Importantly, the findings also suggest that digital connectivity, while moderate, remains a vital tool for engaging with online academic resources. The responses highlight that students with better connectivity can participate in online discussions and use digital tools more effectively. This conclusion is supported by studies such as Guri-Rosenblit (2018), who noted that access to stable digital tools enhances the capacity of students to participate in academic activities. To address these findings, educational policy should focus on enhancing digital infrastructure within institutions, particularly in regions like Oyo State where access is limited. Policymakers need to prioritize investment in technological resources and training for educators to facilitate effective use of these tools in teaching practices. Moreover, establishing partnerships with technology companies could provide affordable solutions for institutions to enhance their digital

environments, ensuring all pre-service teachers can benefit from equal access to online resources. Such initiatives can significantly improve digital connectivity and, in turn, fortify the development of global competence among pre-service teachers, serving as a foundational step in preparing them for an increasingly interconnected world.

Regarding access to online resources, the results show that pre-service teachers in Oyo State have **low access** to a variety of online academic materials, such as e-books, journal articles, and educational databases. While the importance of online resources for academic success is widely acknowledged (Jung, 2019), this study reveals that many pre-service teachers face significant barriers, such as a lack of institutional access to digital libraries and educational databases. These findings resonate with those of Olowu (2020), who reported that limited access to online academic resources remains a critical issue in many educational settings in Nigeria.

Moreover, as noted in this study, challenges in accessing paid or restricted online resources have been highlighted in global contexts, such as in the work of Muriithi (2021), who emphasized that students in many parts of Africa face financial barriers when it comes to accessing academic journals and e-books. The study by Ali and Makino (2020) further corroborates this finding by indicating that while the internet is becoming more accessible, institutional support in terms of offering free or affordable academic resources is lacking in many developing countries.

The findings related to global competence show that the majority of pre-service teachers in Oyo State possess moderate to high levels of global competence. Many respondents are confident in discussing global issues, applying global knowledge to real-world problems, and understanding the relevance of global issues to their field of study. These results are supported by studies that suggest exposure to global perspectives and an understanding of cultural diversity are crucial components of pre-service teacher education (Wells, 2020). Additionally, the results suggest that pre-service teachers are generally open to learning about other cultures and applying global knowledge to their teaching practices, which is consistent with the work of Pashby and Amsler (2021), who noted that developing global competence is increasingly recognised as a critical component of teacher preparation in the 21st century.

However, areas such as critical thinking about global challenges and engaging with global news and trends received more moderate responses, indicating that there are still gaps in fostering deeper global engagement. This observation is in line with the findings of Abdi and Shultz (2021), who discussed the challenges in developing global citizenship competencies among pre-service teachers. The research found that while students were aware of the importance of global competence, their exposure to global issues was often superficial, with limited opportunities to engage critically with these topics.

The significant positive correlations between digital connectivity and global competence ($r = 0.436$, $p < 0.05$), and access to online resources and global competence ($r = 0.482$, $p < 0.05$), suggest that efforts to improve digital connectivity and access to online resources could lead to improved global competence among pre-service teachers. These findings are supported by studies such as those by Hennessy et al. (2020), which found that better access to digital tools and online resources contributes to enhanced global awareness and engagement among students. Similarly,

the work of Tinio (2019) on technology and education highlighted that when students have access to digital tools and resources, they are better equipped to engage in global discourse and develop a more nuanced understanding of global issues.

Furthermore, these findings are in line with the views of Koehler et al. (2018), who argued that digital tools and online resources provide avenues for students to explore global issues, engage with diverse perspectives, and develop the critical thinking skills necessary for global competence. The findings of this study support the notion that digital connectivity and access to online resources are essential drivers of global competence among pre-service teachers, a conclusion also reflected in the work of Darling-Hammond (2021), which suggests that teacher education programs must integrate global perspectives through the use of digital technologies to prepare teachers for the challenges of the globalised world.

The findings show a significant joint predictive relationship between digital connectivity, access to online resources, and global competence among pre-service teachers in Oyo State. Specifically, 62% of the variance in global competence is explained by these two factors ($R^2 = 0.62$, $p < 0.01$), indicating their importance (Hennessy et al., 2020; Koehler et al., 2018). Notably, a one-unit increase in digital connectivity has a more significant impact on global competence (B = 0.48) compared to access to online resources (B = 0.36). This suggests that while both factors are essential, digital connectivity is particularly crucial for developing global competencies. García and Schall (2019) support this by emphasising the need for improved digital infrastructure to enhance educational outcomes. However, access to online resources can be limited by financial and institutional barriers (Ali & Makino, 2020), highlighting the need for strategies that address these challenges in teacher education. Overall, the evidence points to the interconnectedness of digital connectivity and access to online resources as vital for enhancing global competence among pre-service teachers.

Conclusion

The findings of this study underscore the moderate levels of digital connectivity and global competence among pre-service teachers in Oyo State, alongside significant barriers in accessing online resources. To address these challenges, educational institutions should prioritize infrastructure development, ensuring reliable internet connectivity and providing subsidized access to digital resources like e-books and academic journals. Partnerships with technology companies could facilitate affordable solutions, enabling institutions to enhance their digital environments. Furthermore, ongoing professional development for faculty can equip educators with the necessary skills to integrate digital tools and global perspectives into their teaching practices, fostering a more enriched learning experience for pre-service teachers.

Additionally, stakeholders must focus on developing targeted policies that bridge the digital divide, particularly in underserved regions. These policies should aim to improve access to technology, promote digital literacy, and incorporate global competence into teacher education curricula. By reinforcing the integration of digital resources in educational programs, we can better prepare future educators to navigate and contribute to the complexities of an interconnected world, ultimately enhancing their effectiveness as educators in a globalized context. Recognizing the

pivotal role of digital connectivity and resource access as predictors of global competence, concerted efforts from institutions and policymakers are essential for fostering a robust educational framework that empowers pre-service teachers.

Recommendations

To enhance digital connectivity, access to online resources, and global competence among pre-service teachers in Oyo State, the following recommendations are proposed:

1. Improve Digital Infrastructure: It is crucial to ensure reliable internet connectivity and access to digital tools. Educational institutions should work with governmental and private sectors to enhance high-speed internet availability and provide affordable digital devices for students. Building robust digital infrastructure will enable enhanced engagement with online educational resources.
2. Increase Access to Online Resources: Institutions must prioritise expanding access to online academic materials. Providing financial support for accessing paid resources and partnering with digital library platforms can mitigate barriers students currently face. Offering free or subsidised access to e-books, journals, and educational databases is essential for improving academic performance.
3. Integrate Global Competence in Curriculum: Teacher education programs should incorporate global competence into the curriculum by including global issues, cross-cultural perspectives, and international case studies. Pre-service teachers need exposure to diverse global challenges to develop critical thinking skills essential for teaching in a globalised environment.
4. Professional Development for Faculty: Institutions should offer professional development opportunities for faculty to enhance their digital literacy and global competence. By workshops and training sessions, faculty members will be equipped to integrate digital tools and global perspectives effectively into their teaching practices.
5. Conduct Continuous Research and Assessment: There is a need for ongoing research and evaluation of the integration of digital connectivity and global competence in teacher education programs. Institutions should routinely assess technology use and global engagement to identify gaps and make necessary adjustments, ensuring that educational initiatives are responsive to students' evolving needs.

REFERENCES

Adebayo, A. G., & Okunola, A. O. (2021). Challenges of digital literacy and internet access in Nigerian schools: Implications for teacher education. *Journal of Educational Technology, 35*(2), 45-59.

Adebayo, P. O., et al. (2021). The impact of digital connectivity on education in Nigeria. *Journal of Educational Technology, 45*(2), 128-145.

Abdi, A. A., & Shultz, L. (2021). Global competence in teacher education: Approaches and challenges. *Comparative Education Review, 65*(3), 357-380.

Ali, M., & Makino, K. (2020). Barriers to accessing online educational resources in Sub-Saharan Africa. *African Journal of Education and Technology, 12*(4), 45-58.

Bailey, T., & Berman, M. (2021). Global competence in teacher education: Preparing future educators for a globalized world. *Global Education Review, 8*(4), 29-42.

Darling-Hammond, L. (2021). Preparing teachers for a globalised world. *International Journal of Teacher Education, 23*(1), 14-32.

De Lima, A., & Meier, J. (2020). The impact of high-speed internet on educational outcomes: A comparative study in developing countries. *Educational Technology Research and Development, 68*(5), 2499-2513.

García, R., & Schall, G. (2019). Digital connectivity in education: A new era of learning opportunities. *Educational Research Review, 14*(1), 101-115.

Guri-Rosenblit, S. (2018). Digital education in developing countries: Challenges and solutions. *Education and Information Technologies, 23*(2), 505-523.

Greenhow, C., Lewin, C., & Forzani, E. (2016). Social media and education: Reconceptualizing the boundaries of learning. *Educational Researcher, 45*(3), 156-165.

Hennessy, S., et al. (2020). Technology and global citizenship in education. *International Journal of Educational Research, 98,* 98-110.

Jung, I. (2019). E-learning in Africa: Opportunities and challenges. *African Journal of Learning and Education, 2*(4), 67-85.

Koehler, M., et al. (2018). Teacher education and global competence: Integrating digital tools into pre-service teacher education. *Teaching and Teacher Education, 75,* 20-31.

Kozma, R. B. (2017). Technology and global education: A review of international perspectives and challenges. *International Journal of Educational Technology, 22*(1), 15-27.

Li, J., & Ni, X. (2020). Online resources in teacher education: A guide to global learning materials. *International Journal of Educational Development, 75,* 102203.

Magsino, R. M. (2021). Digital tools and their impact on the development of critical thinking skills in education. *Journal of Educational Psychology, 113*(4), 547-560.

Morrison, T., Wiberg, M., & Petersen, A. (2017). Access to online resources and global competence in teacher education: A systematic review. *Education and Information Technologies, 22*(5), 1915-1930.

Muriithi, M. (2021). Access to digital resources for education in Africa: The barriers and opportunities. *Journal of African Higher Education, 33*(1), 78-92.

Olowu, A. (2020). Challenges in accessing digital resources in Nigeria's higher education. *Journal of Educational Research, 32*(2), 101-116.

OECD. (2018). *Global competence for an inclusive world: Preparing teachers for the 21st century.* OECD Publishing.

Pashby, K., & Amsler, S. (2021). Global citizenship education and teacher preparation: Examining practices in Canada and the United States. *Journal of Social Studies Education, 48*(2), 56-70.

Ribeiro, D., Santos, J., & Almeida, A. (2020). The role of digital connectivity in fostering global competence: The case of pre-service teachers in Portugal. *Educational Technology and Society, 23*(4), 56-67.

Sang, G. (2019). The relationship between digital connectivity and global competence among pre-service teachers. *Journal of Teacher Education, 70*(3), 225-240.

Tinio, V. (2019). The role of technology in fostering global competence. *International Review of Education, 65*(4), 399-412.

UNESCO. (2020). *Global education monitoring report: Technology and education.* United Nations Educational, Scientific, and Cultural Organization.