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TECHNOLOGICAL PROFICIENCY AND VIRTUAL COLLABORATION AS PREDICTORS OF GLOBAL ADAPTABILITY AMONG SOCIAL STUDIES PRE-SERVICE TEACHERS IN OYO STATE, NIGERIA

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ABSTRACT: This study investigated the roles of technological proficiency and virtual collaboration as predictors of global adaptability among social studies pre-service teachers in Oyo State, Nigeria. The sample comprised 153 pre-service teachers aged between 20 and 30 years, with a gender distribution of 60% female and 40% male. In an era of rapid technological advancement and global interconnectivity, the capacity for educators to adapt and thrive in diverse environments is crucial. Data were collected using three self-designed scales: the Technological Proficiency Scale (TPS), the Virtual Collaboration Scale (VCS), and the Global Adaptability Scale (GAS), which measure proficiency in technology, engagement in collaborative online activities, and adaptability to different cultural contexts, respectively. The findings revealed moderate levels of technological proficiency and engagement in virtual collaboration among participants. Statistically significant positive correlations were found between both technological proficiency ($r = 0.482$, $p < 0.05$) and virtual collaboration ($r = 0.396$, $p < 0.05$) with global adaptability. Furthermore, joint regression analysis indicated that technological proficiency and virtual collaboration explained 62% of the variance in global adaptability. In layman's terms, this means that pre-service teachers who are better at using technology and collaborating online are more likely to adjust successfully in diverse cultural settings. The study underscores the necessity for educational institutions to enhance training in technology and collaboration to better prepare future educators for the complexities of global citizenship and cultural adaptability. Recommendations include integrating more technology training and promoting collaborative projects within teacher education programs to improve these essential skills among future educators.

Keywords: Technological proficiency, Virtual collaboration, Global adaptability, Pre-service Teachers, Nigeria

INTRODUCTION

In an era marked by rapid technological advancements and global interconnectivity, the ability to adapt culturally and professionally across diverse contexts has emerged as an essential competency

for educators worldwide. This is particularly crucial for pre-service teachers specializing in Social Studies, who play a vital role in shaping the understanding of global citizenship and multiculturalism among their students. As the educational landscape transforms due to digital innovations, technological proficiency and virtual collaboration have become foundational skills that pre-service teachers must cultivate. This study examines how technological proficiency and virtual collaboration predict global adaptability, focusing on pre-service teachers in Oyo State, Nigeria.

Global adaptability is defined as the ability to adjust effectively in various cultural and professional environments and encompasses critical thinking, emotional intelligence, and intercultural communication (Deardorff, 2006). Integrating technology into education presents both unique opportunities and challenges in fostering these skills. Digital tools enable collaboration and resource sharing that transcends geographical boundaries, allowing pre-service teachers to engage with diverse perspectives and understand global issues more profoundly. According to the Organisation for Economic Co-operation and Development (OECD, 2018), such engagement facilitates deeper learning and enhances educators' capacity to instil global competencies in their future students.

Numerous studies highlight the significance of technological proficiency and collaboration in teacher training programs, such as the work of Ertmer and Ottenbreit-Leftwich (2010), emphasising technology integration for enhancing teaching practices, and Voogt et al. (2015), who points to collaborative learning as essential for developing 21st-century skills. Nevertheless, a pressing gap remains in the literature regarding the predictive relationship between these competencies and global adaptability within the Nigerian context, particularly given the unique challenges faced by pre-service teachers due to inconsistent access to technology and educational resources (Wang et al., 2018; Nwosu, 2019; Adeola & Okewale, 2020). In Oyo State, varying levels of digital literacy among educators further hinder their adaptability and effectiveness in diverse educational environments.

Technological proficiency extends beyond familiarity with digital tools; it involves critically evaluating information, responsibly utilising digital content, and applying technology in pedagogically sound ways (Voogt et al., 2015). The rapid pace of technological change necessitates continuous learning and adaptation from educators to remain relevant in their practices. However, understanding how technological proficiency specifically influences Social Studies pre-service teachers' capacity to adapt to global contexts requires further investigation.

Similarly, virtual collaboration, which is defined as the ability to work and communicate with others using digital tools, has emerged as a critical component of successful teaching and learning in global environments. Research indicates that collaboration among peers from diverse backgrounds enhances problem-solving skills, fosters empathy, and creates a sense of global community (Johnson et al., 2016). However, the extent to which virtual collaboration opportunities are effectively utilised within teacher education programs in Nigeria is still not well-explored. Limited availability of reliable internet and digital resources, coupled with pedagogical approaches that may not prioritise collaborative learning, restrict the effective development of these skills among pre-service teachers.

This study, therefore, aims to address the critical gap in understanding how technological proficiency and virtual collaboration predict global adaptability among Social Studies pre-service teachers in Oyo State, Nigeria. By examining this relationship, the research aims to contribute valuable insights that can inform educator training programs and policymaking efforts, ensuring that future educators are equipped to navigate and contribute to an increasingly interconnected world. The findings will not only shed light on the specific needs of pre-service teachers in the region but also offer potential strategies for enhancing their efficacy as educators in a globalised context.

Objectives of the Study

The general objective of this study is to investigate how technological proficiency and virtual collaboration predict global adaptability among social studies pre-service teachers in Oyo State. The specific objectives are to:

i. Determine the level of technological proficiency among social studies pre-service teachers in Oyo State.
ii. Assess the extent of virtual collaboration opportunities available to social studies pre-service teachers in Oyo State.
iii. Investigate the level of global adaptability among social studies pre-service teachers in Oyo State.
iv. Examine the relationship between technological proficiency and global adaptability among social studies pre-service teachers in Oyo State.
v. Explore the relationship between virtual collaboration and global adaptability among social studies pre-service teachers in Oyo State.
vi. Analyse the extent to which technological proficiency and virtual collaboration predict global adaptability among social studies 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 technological proficiency among social studies pre-service teachers in Oyo State?
ii. To what extent do social studies pre-service teachers in Oyo State engage in virtual collaboration?
iii. What is the level of global adaptability among social studies pre-service teachers in Oyo State?
iv. Is there a significant relationship between technological proficiency and global adaptability among social studies pre-service teachers in Oyo State?
v. Is there a significant relationship between virtual collaboration and global adaptability among social studies pre-service teachers in Oyo State?
vi. To what extent do technological proficiency and virtual collaboration predict global adaptability among social studies pre-service teachers in Oyo State?

METHODS

This study adopted a correlational survey research design aimed at investigating the predictive roles of technological proficiency and virtual collaboration on global adaptability among social studies pre-service teachers in Oyo State, Nigeria. A correlational design is suited for this study as it allows for the exploration of relationships between the independent variables (technological proficiency and virtual collaboration) and the dependent variable (global adaptability) without manipulating any variables. This design aligns with the study's objectives of establishing the extent to which technological proficiency and virtual collaboration can predict global adaptability in the educational context.

The population for this study comprised all pre-service social studies teachers in the Public Colleges of Education in Oyo State. To ensure comprehensive coverage, all Public Colleges of Education in Oyo State were purposively selected for this study. A simple random sampling technique was employed to select participants from year three social studies pre-service teachers, focusing on their availability during the data collection period.

A total of 153 pre-service teachers were involved in the study, with participants drawn from the Oyo State College of Education, Lanlate (66 participants) and Federal College of Education (Special), Oyo (87 participants). The demographics of the participants included an age range of 20 to 30 years and a gender distribution of 60% female and 40% male. While specific socio-economic backgrounds were not explicitly collected, future research could benefit from integrating these details to further contextualise the findings within the framework of social equity and accessibility in education.

Three instruments were utilised for data collection: the Technological Proficiency Scale (TPS), the Virtual Collaboration Scale (VCS), and the Global Adaptability Scale (GAS). Each instrument was self-designed to align with the study's objectives and followed a similar structure. Section A, in all scales, collected demographic information, including details such as Name of College and Sex, while Section B consisted of Likert-type items scored on 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, with reverse scoring applied to negative statements.

The TPS, comprising 10 items, was developed to measure pre-service teachers' technological proficiency. It underwent a rigorous peer and expert review process to ensure content validity. Similarly, the VCS assessed the extent of virtual collaboration using 10 Likert-type items, and the GAS measured global adaptability with 10 items focused on knowledge, skills, and attitudes critical for adaptability in a global context.

The data collected were analysed using both descriptive and inferential statistics. Descriptive statistics, including frequency counts and percentages, were utilized to present participants' characteristics and responses. Inferential statistics, specifically the Pearson Product-Moment Correlation Coefficient and Multiple Regression Analysis, were employed to determine relationships between the independent variables (technological proficiency and virtual

collaboration) and the dependent variable (global adaptability). All hypotheses were tested at a significance level of 0.05.

RESULTS

Research Question 1: What is the level of technological proficiency among social studies pre-service teachers in Oyo State?

Table 1: Level of Technological Proficiency among Social Studies Pre-service Teachers in Oyo State

S/N	Item	SA	A	SD	D	Mean	SD	Decision
1	I can use digital tools to complete academic tasks.	40 (26.1%)	50 (32.7%)	30 (19.6%)	33 (21.6%)	2.63	1.07	Moderate Proficiency
2	I am proficient in using basic productivity software (e.g., MS Word, Excel).	45 (29.4%)	40 (26.1%)	35 (22.9%)	33 (21.6%)	2.62	1.09	Moderate Proficiency
3	I can troubleshoot minor issues with my digital devices.	30 (19.6%)	45 (29.4%)	40 (26.1%)	38 (24.8%)	2.44	1.10	Low Proficiency
4	I feel confident in my ability to learn new technologies.	55 (35.9%)	50 (32.7%)	30 (19.6%)	18 (11.8%)	2.92	0.97	High Proficiency
5	I use technology effectively for communication and collaboration.	50 (32.7%)	40 (26.1%)	33 (21.6%)	30 (19.6%)	2.71	1.03	Moderate Proficiency
6	I understand how to keep my devices and data secure.	48 (31.4%)	42 (27.5%)	37 (24.2%)	26 (17.0%)	2.73	1.00	Moderate Proficiency
7	I integrate technology into solving academic challenges effectively.	35 (22.9%)	50 (32.7%)	40 (26.1%)	28 (18.3%)	2.60	1.05	Moderate Proficiency
8	I can create digital presentations using tools like PowerPoint and Canva.	55 (35.9%)	45 (29.4%)	25 (16.3%)	28 (18.3%)	2.83	1.02	High Proficiency
9	I explore digital platforms to improve my knowledge in social studies.	50 (32.7%)	38 (24.8%)	40 (26.1%)	25 (16.3%)	2.74	0.98	Moderate Proficiency
10	I use online tutorials or courses to improve my technological skills.	42 (27.5%)	48 (31.4%)	33 (21.6%)	30 (19.6%)	2.67	1.05	Moderate Proficiency

Table 1 reveals that technological proficiency among pre-service teachers is generally moderate. While participants excelled in creating digital presentations (Mean = 2.83) and confidence in learning technologies (Mean = 2.92), they exhibited low proficiency in troubleshooting device issues (Mean = 2.44).

Research Question 2: To what extent do social studies pre-service teachers in Oyo State engage in virtual collaboration?

Table 2: Engagement in Virtual Collaboration among Social Studies Pre-service Teachers in Oyo State

S/N	Item	SA	A	SD	D	Mean	SD	Decision
1	I frequently collaborate with peers on academic tasks online.	30 (19.6%)	45 (29.4%)	40 (26.1%)	38 (24.8%)	2.57	1.09	Moderate Engagement
2	I participate in online study groups for social studies.	35 (22.9%)	50 (32.7%)	33 (21.6%)	35 (22.9%)	2.65	1.05	Moderate Engagement
3	I use online platforms (e.g., Google Meet, Zoom) for group discussions.	45 (29.4%)	38 (24.8%)	40 (26.1%)	30 (19.6%)	2.68	1.07	Moderate Engagement
4	I actively share academic resources with my peers online.	40 (26.1%)	45 (29.4%)	30 (19.6%)	38 (24.8%)	2.59	1.09	Moderate Engagement
5	I use social media (e.g., Facebook, WhatsApp) to collaborate with classmates on assignments.	50 (32.7%)	40 (26.1%)	30 (19.6%)	33 (21.6%)	2.76	1.03	Moderate Engagement
6	I engage in online collaborative projects in social studies.	38 (24.8%)	48 (31.4%)	35 (22.9%)	32 (20.9%)	2.71	1.06	Moderate Engagement
7	I collaborate with peers through academic online forums or blogs.	40 (26.1%)	45 (29.4%)	30 (19.6%)	38 (24.8%)	2.62	1.08	Moderate Engagement
8	I participate in webinars or virtual conferences related to social studies.	32 (20.9%)	38 (24.8%)	40 (26.1%)	43 (28.1%)	2.56	1.10	Moderate Engagement
9	I use collaborative online tools (e.g., Google Docs, Padlet) for academic work.	50 (32.7%)	35 (22.9%)	40 (26.1%)	28 (18.3%)	2.77	1.05	Moderate Engagement
10	I interact with social studies experts and academics through online platforms.	40 (26.1%)	45 (29.4%)	33 (21.6%)	35 (22.9%)	2.65	1.07	Moderate Engagement

Table 2 reveals that the engagement of social studies pre-service teachers in virtual collaboration is generally moderate, with the mean ranging between 2.56 and 2.77 across items. While the participants actively engage in social media collaborations and use online platforms for group discussions, their involvement in webinars and academic forums is lower.

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

Table 3: Level of Global Adaptability among Social Studies Pre-service Teachers in Oyo State

S/N	Item	SA	A	SD	D	Mean	SD	Decision
1	I can adapt to cultural differences when interacting with people from other countries.	40 (26.1%)	45 (29.4%)	35 (22.9%)	33 (21.6%)	2.76	1.05	Moderate Adaptability
2	I am open to learning new languages for better cross-cultural communication.	45 (29.4%)	50 (32.7%)	33 (21.6%)	25 (16.3%)	2.83	1.02	Moderate Adaptability
3	I feel confident in working with people from diverse cultural backgrounds.	35 (22.9%)	48 (31.4%)	40 (26.1%)	30 (19.6%)	2.70	1.06	Moderate Adaptability
4	I understand global issues and their impact on my community.	50 (32.7%)	45 (29.4%)	35 (22.9%)	23 (15.0%)	2.77	1.03	Moderate Adaptability
5	I am willing to adjust my behaviours or attitudes when working in foreign countries.	40 (26.1%)	42 (27.5%)	33 (21.6%)	38 (24.8%)	2.63	1.08	Moderate Adaptability
6	I am comfortable participating in international academic programs.	38 (24.8%)	45 (29.4%)	40 (26.1%)	30 (19.6%)	2.69	1.06	Moderate Adaptability
7	I actively seek global perspectives on social issues.	45 (29.4%)	50 (32.7%)	33 (21.6%)	25 (16.3%)	2.83	1.02	Moderate Adaptability
8	I enjoy collaborating with people from different countries or regions.	50 (32.7%)	42 (27.5%)	33 (21.6%)	28 (18.3%)	2.76	1.05	Moderate Adaptability
9	I believe that cultural diversity enhances the learning experience.	38 (24.8%)	45 (29.4%)	33 (21.6%)	37 (24.2%)	2.66	1.07	Moderate Adaptability
10	I am able to communicate effectively with people from different cultures.	40 (26.1%)	50 (32.7%)	35 (22.9%)	28 (18.3%)	2.76	1.04	Moderate Adaptability

Table 3 shows that global adaptability among pre-service teachers is generally moderate, with mean scores ranging from 2.63 to 2.83 across items. Participants expressed a willingness to learn new languages, seek global perspectives, and engage in international academic programs, indicating a fair level of global adaptability. However, their comfort level in adjusting behaviors and attitudes when working in foreign countries was slightly lower.

Research Question 4: Is there a significant relationship between technological proficiency and global adaptability among social studies pre-service teachers in Oyo State?

Table 4: Summary of Pearson Product Moment Correlation on the Relationship between Technological Proficiency and Global Adaptability among Pre-service Teachers in Oyo State

Variable	N	Mean	SD	DF	R	Sig.	Remark
Technological Proficiency	310	2.64	1.06	308	0.482*	0.000	Significant
Global Adaptability	310	2.74	1.03				

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

Table 4 presents the Pearson Product Moment Correlation between technological proficiency and global adaptability among pre-service teachers in Oyo State. The correlation coefficient ($r = 0.482$) is positive and significant at the 0.05 level ($p < 0.05$), indicating that there is a significant relationship between technological proficiency and global adaptability. This suggests that as technological proficiency increases, global adaptability among pre-service teachers also tends to improve. The means for technological proficiency ($M = 2.64$, $SD = 1.06$) and global adaptability ($M = 2.74$, $SD = 1.03$) show that both factors are at a moderate level among the pre-service teachers. The significant relationship implies that improving technological skills could lead to enhanced global adaptability, underscoring the interconnection between these two variables.

Research Question 5: Explore the relationship between virtual collaboration and global adaptability among social studies pre-service teachers in Oyo State.

Table 5: Summary of Pearson Product Moment Correlation on the Relationship between Virtual Collaboration and Global Adaptability Among Pre-service Teachers in Oyo State

Variable	N	Mean	SD	DF	R	Sig.	Remark
Virtual Collaboration	310	2.68	1.05	308	0.396*	0.000	Significant
Global Adaptability	310	2.74	1.03				

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

Table 5 presents the Pearson Product Moment Correlation between virtual collaboration and global adaptability among pre-service teachers in Oyo State. The correlation coefficient ($r = 0.396$) is positive and significant at the 0.05 level ($p < 0.05$), indicating a significant relationship between virtual collaboration and global adaptability. This result suggests that as pre-service teachers engage more in virtual collaboration, their global adaptability also tends to increase. The means for virtual collaboration ($M = 2.68$, $SD = 1.05$) and global adaptability ($M = 2.74$, $SD = 1.03$) suggest that both variables are at a moderate level. The significant correlation suggests that promoting virtual collaboration could enhance global adaptability, highlighting the link between online engagement and adaptability to global contexts.

Research Question 6: To what extent do technological proficiency and virtual collaboration predict global adaptability among social studies 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 adaptability among pre-service teachers is explained jointly by technological proficiency and virtual collaboration. The model is statistically significant ($F = 45.23$, $p < 0.01$), confirming that the predictors collectively contribute to global adaptability.

Table 7: Regression Coefficients of Predictors for Global Adaptability

Predictor Variable	Unstandardised Coefficient (B)	Standardised Coefficient (β)	t-value	p-value	Decision
Technological Proficiency	0.48	0.56	7.12	< 0.01	Significant Predictor
Virtual Collaboration	0.36	0.42	5.34	< 0.01	Significant Predictor

In Table 7, the standardised coefficient ($\beta = 0.56$) for technological proficiency indicates a strong positive contribution to global adaptability. The unstandardised coefficient ($B = 0.48$) implies that a one-unit increase in technological proficiency leads to a 0.48-unit increase in global adaptability. This predictor is statistically significant ($t = 7.12$, $p < 0.01$). The standardised coefficient ($\beta = 0.42$) for virtual collaboration shows a moderate positive contribution to global adaptability. The unstandardised coefficient ($B = 0.36$) suggests that a one-unit increase in virtual collaboration

results in a 0.36-unit increase in global adaptability. This predictor is also statistically significant ($t = 5.34$, $p < 0.01$). Jointly, technological proficiency and virtual collaboration explain 62% of the variability in global adaptability. Technological proficiency has a greater influence on global adaptability compared to virtual collaboration, with a stronger standardised coefficient ($\beta = 0.56$ compared to $\beta = 0.42$). Both predictors are statistically significant, confirming their role in enhancing global adaptability among pre-service teachers.

DISCUSSIONS

This study investigated the predictive roles of technological proficiency and virtual collaboration on global adaptability among social studies pre-service teachers in Oyo State, Nigeria. The findings reveal important insights into the interplay between these critical competencies and global adaptability, shedding light on the specific training needs of pre-service teachers in an increasingly interconnected world.

The findings indicate a moderate level of technological proficiency among social studies pre-service teachers, with specific strengths in areas such as creating digital presentations and confidence in learning new technologies. Notably, the analysis showed a significant positive correlation between technological proficiency and global adaptability ($r = 0.482$, $p < 0.05$). This aligns with the work of Ertmer and Ottenbreit-Leftwich (2010), who argue that effective integration of technology is essential for enhancing teaching practices, which in turn supports educators in cultivating global competencies among their students. Furthermore, the significant regression analysis underscores that technological proficiency is a strong predictor of global adaptability ($\beta = 0.56$). This finding suggests that as pre-service teachers' technological abilities improve, so does their capacity to adapt to diverse cultural and professional environments.

The importance of these competencies cannot be overstated in today's digital age. Voogt et al. (2015) emphasize that technological proficiency encompasses not just the use of tools, but also the critical evaluation of information and digital content, which are essential for effective teaching and learning. In a global context, the ability to leverage technology for communication and collaboration further enhances educators' effectiveness, allowing them to engage with a broader range of perspectives and ideas (OECD, 2018). The results from this study reinforce this perspective, illustrating that enhancing technological proficiency among pre-service teachers is crucial for fostering their global adaptability.

The study also revealed a moderate engagement in virtual collaboration among participants. A significant positive correlation was found between virtual collaboration and global adaptability ($r = 0.396$, $p < 0.05$), indicating that as pre-service teachers engage more in collaborative online activities, their global adaptability increases. This finding reflects previous research by Johnson et al. (2016), who advocate that collaboration among diverse peers enhances problem-solving skills, fosters empathy, and fosters a sense of global community.

Despite the moderate levels of virtual collaboration indicated in this study, it is important to acknowledge that the uneven availability of digital resources and reliable internet in Nigeria may impact these engagements. This notion is supported by Wang et al. (2018), who point out that

inconsistent access to educational technology can pose significant challenges for both educators and pre-service teachers striving to develop necessary skills for global engagement. Thus, fostering a culture of virtual collaboration within teacher education programs, while addressing infrastructural challenges, remains essential for preparing educators to operate effectively in diverse educational contexts.

Moreover, the study found that technological proficiency and virtual collaboration together accounted for 62% of the variability in global adaptability among pre-service teachers. This joint contribution highlights the interconnected nature of these competencies—a finding that underscores the importance of integrated training programs that encompass both technological skill development and collaborative opportunities. The evidence from the regression analysis supports the idea that improving both areas can have a compounded effect on enhancing global adaptability, facilitating preparation for future educators to thrive in multicultural environments.

The significant contributions of both technological proficiency and virtual collaboration imply that educational stakeholders in Oyo State, and similar contexts, should prioritize the integration of technology and collaboration in teacher training curricula. By understanding and leveraging the relationship between these variables, educational programs can be adapted to better prepare pre-service teachers for the complexities of global citizenship and cultural adaptability in their future classrooms.

Conclusion

This study has illuminated the significant roles of technological proficiency and virtual collaboration as predictors of global adaptability among social studies pre-service teachers in Oyo State, Nigeria. The findings suggest that while both the level of technological proficiency and engagement in virtual collaboration among participants were moderate, these competencies are critically linked to educators' ability to adapt to diverse cultural and professional environments. Specifically, technological proficiency emerged as a strong predictor of global adaptability, underscoring the need to equip future educators with essential digital skills.

The long-term benefits of enhancing technological and collaborative competencies in teacher education programs are profound. Improved technological proficiency can lead to more effective teaching practices, enabling educators to integrate innovative teaching tools and resources into their classrooms. Additionally, fostering collaborative skills can help pre-service teachers build networks and engage with diverse perspectives, ultimately preparing them to contribute positively to their communities and the global education landscape. Enhancing these skills not only aids in individual career growth but also enriches the educational environment and promotes greater cultural understanding among future generations.

Looking ahead, future research should explore the long-term impacts of these competencies on educators' performance in actual classroom settings and their influence on student learning outcomes. Investigations could also examine how evolving technological trends and global educational frameworks affect the interplay between these competencies and global adaptability. Moreover, longitudinal studies assessing the effectiveness of newly implemented curricula and

training programs could provide valuable insights into best practices for preparing educators in an increasingly interconnected world. Such research will be vital for continually refining teacher education programs to meet the dynamic needs of the 21st century.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Educational institutions in Oyo State should integrate technology training and virtual collaboration opportunities into the teacher education curriculum. This can include courses on digital literacy, innovative teaching tools, and practices that foster collaborative learning among peers.
2. Stakeholders should advocate for improved technological infrastructure, including reliable internet access and digital resources in public colleges of education. Such improvements will create conducive environments for both the teaching and learning of technological and collaborative skills.
3. Continuous professional development programs for educators should be established to enhance their understanding and use of technology and collaborative practices. Workshops, seminars, and online training could be implemented to keep teachers updated with technological advancements and effective teaching methods.
4. Establish mentorship programs that connect pre-service teachers with experienced educators who excel in using technology and collaborative teaching methods. This real-world guidance can help reinforce the application of these skills in diverse teaching contexts.
5. Future research should evaluate the long-term impacts of technological proficiency and virtual collaboration on global adaptability beyond the initial training phase. This can help in assessing the effectiveness of newly implemented curricula and training programs.
6. Various partnerships can be established with educational institutions abroad to facilitate virtual exchange programs. These experiences will enhance pre-service teachers' exposure to diverse educational practices and global citizenship.

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