IMPACT OF DIGITAL MENTORING AND PROFESSIONAL DEVELOPMENT FOR TEACHERS IN OSUN STATE

Odunlami, Adedayo Adeniran, PhD
Department of Educational Management,
Faculty of Education,
University of Ilesa, Ilesa, Osun State
odunlamiadedayo111@gmail.com / adedayo_odunlami@unilesa.edu.ng
&
Oreoluwa Christianah Foluke
Department of Educational Management,
Faculty of Education,
University of Ilesa, Ilesa, Osun State
christianahfolukeoreoluwa@gmail.com
&
Adebanjo, Oluwakemi Kikelomo
Department of Public Administration,
Faculty of Social and Management Sciences,
University of Ilesa, Ilesa, Osun State
oluwakemi_adebanjo@unilesa.edu.ng / omolekemmy22@gmail.com

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Abstract
The quick progress of digital technologies has changed educational systems across the globe, making new ways for teacher professional development. This study looked into how digital mentoring affects the professional development of secondary school teachers in Osun State, Nigeria. A descriptive survey research design was used to collect data from a proportionally stratified sample of 200 teachers taken from a population of 6,850, using a validated questionnaire with a Cronbach's alpha of 0.82. The results showed that digital mentoring had a notable positive effect on teachers' instructional improvement, technological competence, and overall professional growth. In particular, 87.5% of the respondents agreed or strongly agreed that digital mentoring improved lesson planning and instructional delivery, with an aggregate mean of 3.22 and a standard deviation of 0.70. Likewise, 87.5% indicated enhanced technological competence with an aggregate mean of 3.24 and a standard deviation of 0.69, and 87.5% recognised greater overall professional development with an aggregate mean of 3.29 and a standard deviation of 0.65. However, moderate challenges were found, including limited internet access with 70% agreement, lack of digital devices with 65% agreement, insufficient training and support with 70% agreement, and workload issues with 72.5% agreement. Linear regression analysis indicated that digital mentoring had a significant positive effect on professional development with a B value of 0.575 and a p value of less than 0.05, explaining 27% of the variance with an R^2 of 0.27, F value of 74.89, and a p value of less than 0.05. The study concludes that digital mentoring is an effective method for improving teachers' competence, instructional practices, and technological skills. It suggests implementing structured digital mentoring programmes, investing in digital infrastructure, and providing regular training to maximise the benefits of digital mentoring for teachers in Osun State and similar educational settings.

Keywords: Digital Mentoring, Professional Development, Instructional Improvement, Technological Competence, Teachers

Introduction

Education systems all around the world are currently going through significant changes because of fast technological progress and a growing need for good quality teaching and learning. In the 21st century, teachers are expected to not only have strong knowledge of their subjects but also to show skill in digital technologies, new teaching methods, and continual professional growth. As the contexts of education change, the need for effective professional development programmes that help teachers adjust to modern teaching requirements has become more important (Okpor, 2026). Professional development is understood as the ongoing process by which teachers improve their professional knowledge, teaching skills, and teaching methods to enhance student learning results (Ajani, 2020; Awodiji, 2018). Traditional ways of professional development for teachers usually include workshops, conferences, and in-service training programmes that are set up by educational institutions (Egbo, 2011). While these methods do offer useful learning chances, they often have limits in terms of how broad they are and how often they happen. As a result, many researchers have highlighted the importance of ongoing and collaborative types of professional development that allow teachers to take part in reflective practice and professional learning networks.

Mentoring has garnered considerable attention in recent years as a strategy for the professional development of educators. It is generally defined as a professional relationship in which a more experienced individual provides guidance, support, and knowledge to a less experienced colleague. Within educational contexts, mentoring is widely recognised for its role in enhancing teachers' instructional competence and professional confidence, as well as in developing pedagogical content knowledge, cross-curricular skills, and classroom management techniques (Li, 2018; Thant Sin, 2022). However, traditional mentoring systems in Nigeria are often hindered by factors such as geographical distance, time constraints, and the absence of structured programmes (Adeoye, 2025; Ifarajimi, 2025).

These challenges have led to the emergence of digital mentoring, also referred to as e-mentoring or online mentoring, which utilises digital communication technologies to facilitate mentoring relationships among educators (Karthika & Alamelu, 2024). Digital mentoring encompasses the use of platforms such as email, video conferencing, online discussion forums, and learning management systems to support mentoring interactions. Through digital mentoring, teachers can share resources, receive feedback, and engage in collaborative professional learning communities.

Recent research indicates that digital mentoring significantly contributes to the professional development and technological competence of teachers (Agwom, Jibrin & Lawal, 2025; J Jolimate, 2025). Technology-enhanced mentoring programmes have been shown to improve teachers' ability to effectively utilise ICT in their teaching practices, promote professional learning networks, and facilitate collaborative problem-solving among educators (Arowolo, 2025; Uzezi, 2025). These advantages are particularly relevant in developing countries such as Nigeria, where access to ongoing professional development is often impeded by insufficient funding, inadequate infrastructure, and a scarcity of qualified mentors (Ifarajimi, 2025; Egbai&Uzoigwe, 2026).

In Osun State, initiatives aimed at enhancing teacher quality, including the Nigeria Learning Passport and technology-driven teacher transformation schemes, have begun to address some of these challenges. Nevertheless, many public school teachers continue to face obstacles related to limited systemic mentoring support, infrastructural deficiencies, and a lack of opportunities for personalised, continuous learning (Bamigbola, 2025). As digital

technologies become increasingly integrated into educational practices, the need for innovative professional development strategies, particularly structured digital mentoring frameworks, becomes essential. Consequently, this study investigates the impact of digital mentoring on the professional development of secondary school teachers in Osun State, focusing on instructional enhancement, technological competence, and engagement in continuous professional learning.

Statement of the Problem

Efforts to enhance the quality of education in Nigeria, secondary school teachers encounter considerable obstacles in accessing continuous professional development. Conventional frameworks, such as periodic, one-off workshops, lack the structural flexibility, frequency, and individualised support necessary to address contemporary instructional requirements. In Osun State, these challenges are exacerbated by infrastructural deficiencies, budget limitations, and a shortage of qualified personnel, resulting in many educators being inadequately prepared to incorporate technology into their classrooms. Although digital mentoring has emerged as a viable alternative for providing ongoing pedagogical guidance and fostering collaborative learning, its practical implementation and actual effectiveness within Osun State remain uncertain. Teachers often face foundational deficits in digital literacy, unreliable internet connectivity, and insufficient institutional support. Moreover, localized empirical research investigating the direct impact of virtual mentorship frameworks on teachers' instructional improvement, technological proficiency, and overall professional identity is notably limited. This study, therefore, aims to address these deficiencies by assessing how digital mentoring influences educators' professional development in Osun State and identifying the systemic barriers that impede its optimisation.

Purpose of the Study

The purpose of this study is to examine the impact of digital mentoring on the professional development of teachers in Osun State.

Specifically, the study sought to;

1. Investigate the impact of digital mentoring on teachers' instructional improvement in Osun State;
2. Examine how digital mentoring influence teachers' technological competence in Osun State;
3. Find out the ways to participation digital mentoring programs affect the overall professional development of teachers in Osun State;
4. Investigate the challenges do teachers encounter in engaging with digital mentoring as part of their professional development in Osun State; and
5. Examine the significant impact of digital mentoring on the professional development of teachers in Osun State.

Research Questions

1. What is the impact of digital mentoring on teachers' instructional improvement in Osun State?
2. How does digital mentoring influence teachers' technological competence in Osun State?
3. In what ways does participation in digital mentoring programs affect the overall professional development of teachers in Osun State?
4. What challenges do teachers encounter in engaging with digital mentoring as part of their professional development in Osun State?

Hypothesis

H_0: Digital mentoring has no significant impact on the professional development of teachers in Osun State.

Review of Related Literature

Theoretical Framework

This study is based on the Social Learning Theory that was first put forward by Albert Bandura in the year of 1977, and it was later developed into what is called Social Cognitive Theory in 1986 to include the role of cognitive processes in how humans learn. Social Learning Theory suggests that people gain knowledge by watching others, interacting with them, and working together with them. According to this theory, learning happens when individuals see the actions of other people and then copy or modify those actions in their own behaviours. In schools and educational contexts, teachers often improve their professional skills by watching more experienced colleagues and taking part in group learning activities. Mentoring relationships give teachers the chance to watch, learn from, and connect with more experienced mentors who assist them in improving their teaching methods. Through mentoring, teachers get feedback, exchange experiences, and come up with new approaches to teaching.

Digital mentoring takes the ideas of Social Learning Theory and applies them to online settings, allowing for interactions between teachers and their mentors or colleagues through digital communication tools. These interactions allow teachers to take part in collaborative learning, share thoughts, and think about their teaching methods. Therefore, Social Learning Theory is a suitable framework for understanding how digital mentoring can support the professional development of teachers through collaborative learning and professional interaction.

Digital Mentoring

Digital mentoring, which is also called e-mentoring or online mentoring, is a type of professional support process where experienced individuals help those who are less experienced through various digital communication technologies like online platforms, video conferencing, collaborative forums, and learning management systems. This method has come about because of the growing use of digital technologies in professional development and educational practices. In the past, mentoring has been seen as a useful way to support teacher development, allowing seasoned educators to assist novice teachers in enhancing their instructional practices and professional skills. Nevertheless, the introduction of digital communication technologies has changed traditional mentoring methods into more flexible models that go beyond physical limitations. Digital mentoring now allows for greater opportunities for teachers to get guidance, feedback, and collaborative support using virtual means (Rozhina, 2025).

Professional Development

The increasing need for ongoing professional development among educators in the 21st century has led to a rise in the use of digital mentoring. Teachers are now required to not only incorporate digital technologies into their teaching and learning practices but also to adjust to changing curriculum requirements. Consequently, digital mentoring has emerged as a significant method for enhancing teachers' abilities to effectively utilise educational technologies. Recent studies provide evidence for these developments. Hussain et al. (2025) discovered that digital mentoring programmes considerably improve teacher competence, confidence, and collaboration among professionals, particularly in educational settings with limited resources. Likewise, Uzezi et al. (2025) found that science teachers in Nigeria who took part in digital mentoring exhibited greater levels of professional competence and

effectiveness in teaching when compared to those who only engaged in traditional training methods.

Digital mentoring also aids in the formation of professional learning communities, where educators can work together to address instructional challenges and refine classroom practices. Within these online communities, teachers share experiences, talk about difficulties, and devise innovative teaching methods that enhance the overall education quality. Research conducted by Tripon (2025) and Addai-Poku (2024) indicates that technology-supported mentoring initiatives encourage teachers' involvement in professional learning communities, promote collaborative teaching methods, and enhance digital skills and instructional performance.

Moreover, digital mentoring proves to be especially useful in situations where access to conventional professional development programmes is restricted. Online mentoring platforms provide flexible and cost-efficient options, allowing teachers, even those in environments with limited resources, to access educational materials, exchange ideas with colleagues, and receive feedback from mentors (Tripon, 2025; Noyam, 2025). J Jolimate (2025) undertook an action research study in Kwara State, Nigeria, demonstrating that remote, technology-based mentoring can overcome local spatial limitations and result in immediate improvements in lesson planning, classroom management, and ICT integration skills for novice teachers. Noyam (2025) further noted that virtual mentorship diminishes professional isolation by enabling frequent feedback sessions, which traditional face-to-face supervision often fails to provide adequately.

Nevertheless, the academic literature also points out ongoing challenges. Egbai and Uzoigwe (2026) noted that while digital media has improved communication and data collection between supervisors and teachers, infrastructural issues such as inadequate internet access and limited digital skills among older educators continue to obstruct the effective use of online mentoring. Additionally, Ifarajimi (2025) highlighted through a mixed-methods study that although structured mentoring is a key factor in predicting teacher capacity and retention, many institutional frameworks in Nigerian public schools remain disjointed and underfunded, indicating a necessity for formalised, technology-mediated continuous professional development frameworks.

In conclusion, both theoretical and empirical literature align in suggesting that digital mentoring is an effective instrument for enhancing teachers' professional development. It allows educators to build confidence in technology, participate in collaborative learning, and improve teaching quality, provided that the challenges related to infrastructure and institutional backing are addressed in a strategic manner. By incorporating digital mentoring into continuous professional development frameworks, educational systems can better assist teachers in adapting to advancements in technology and changing educational requirements.

Methodology

Research Design

This study used descriptive survey research design and employed quantitative methods to evaluate the effects of digital mentoring and professional development for teachers in Osun State. The descriptive survey design is suitable because it allows for the systematic gathering and analysis of numerical data that describe existing conditions and look into supposed relationships without changing any variables.

Population of the Study

The population for this study comprises all public secondary school teachers in Osun State, Nigeria. According to the Osun State Ministry of Education (2024), there are approximately 6,850 teachers distributed across public secondary schools in the state.

Sample and Sampling Technique

A multi-stage sampling technique was used to choose the study sample. In the first stage, the state was divided into its three senatorial districts which are Osun West, Osun Central, and Osun East, and stratified sampling was applied to make sure there was geographic representation. In the second stage, simple random sampling was employed within each senatorial district to select public secondary schools so that each school had an equal chance to be chosen. In the third stage, proportionate sampling was used to select teachers from the schools that were sampled in each district. The number of teachers selected from each school was based on the total number of teachers that school had, which helped to ensure that the sample was reflective of the distribution of the teacher population. A total of 200 teachers were selected from a population of 6,850 and this was distributed proportionally across the three senatorial districts. The information is shown in the diagram below.

Table 1: Distribution of Sampled Teachers by Senatorial District

Senatorial District	Total Number of Teachers	Number of Teachers Sampled
Osun West	2,281	67
Osun Central	2,514	74
Osun East	2,055	59
Total	**6,850**	**200**

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Research Instrument

Data were collected using a structured questionnaire titled "Digital Mentoring and Teachers' Professional Development Questionnaire (DMTPDQ)." The instrument comprised two sections:

- **Section A:** Ten items measuring dimensions of digital mentoring, focusing on aspects such as the use of virtual collaborative fora and digital feedback loops.
- **Section B:** Ten items assessing teachers' professional development, with emphasis on instructional competence and professional confidence.All items were rated on a 4-point modified Likert scale, ranging from Strongly Agree (4) to Strongly Disagree (1).

Validity and Reliability of the Instrument

The questionnaire was subjected to both face and content validity by experts in Educational Management to ensure that all items were relevant and adequate for the constructs being measured. For reliability, the questionnaire was pilot-tested on 30 teachers outside the study area. The internal consistency of the instrument was determined using Cronbach's Alpha, yielding a coefficient of 0.82, which indicates high reliability.

Method of Data Collection

The researcher administered the questionnaire in person to the sampled teachers across the selected schools. Participation was voluntary and the anonymity and confidentiality of respondents were assured to encourage honest and unbiased responses.

Method of Data Analysis

Data collected were analyzed using both descriptive and inferential statistics. Descriptive statistics such as mean and standard deviation were used to analysed the research question raise while inferential statistics of Pearson's product moment correlation study's hypotheses. The level of significance was set at 0.05.

Data Presentation and Analysis

Research Question 1: Impact of Digital Mentoring on Teachers' Instructional Improvement

Table 2:Impact of Digital Mentoring on Teachers' Instructional Improvement

S/N	Item	SA (n, %)	A (n, %)	D (n, %)	SD (n, %)	Mean	SD
1.	Digital mentoring has improved my lesson planning and delivery.	80 40.0%	95 47.5%	20 10.0%	5 2.5%	3.25	0.68
2.	I have learned innovative teaching strategies through digital mentoring.	70 35.0%	100 50.0%	25 12.5%	5 2.5%	3.18	0.74
3.	My ability to give clear instructions in class has improved due to digital mentoring.	75 37.5%	90 45.0%	30 15.0%	5 2.5%	3.18	0.70
4.	Feedback from mentors via digital platforms has enhanced my teaching effectiveness.	85 42.5%	85 42.5%	25 12.5%	5 2.5%	3.25	0.68
5.	Digital mentoring has increased my confidence in managing classroom instruction.	78 39.0%	92 46.0%	25 12.5%	5 2.5%	3.22	0.71
	Aggregate Weighted Mean / SD					**3.22**	**0.70**

The results displayed in Table 1 indicate that teachers located in Osun State tend to view digital mentoring as having a beneficial effect on the improvement of their instructional methods. For each individual item, most of the respondents chose either "Strongly Agree" or "Agree." For instance, 87.5 percent, which is 175 out of 200 respondents, agreed or strongly agreed that digital mentoring had a positive effect on their lesson planning and delivery, whereas only 12.5 percent disagreed or strongly disagreed. Similar trends can be seen in the other items, with high percentages indicating agreement on the advantages of innovative teaching strategies, clarity in classroom instruction, effectiveness of feedback, and confidence in managing classroom instruction. The combined weighted mean score of 3.22, which is based on a 4-point scale, further supports the conclusion that, on average, the respondents agreed that digital mentoring improves their instructional practices. The aggregate standard deviation, which is relatively low at 0.70, suggests that the responses from teachers were closely grouped around the mean, indicating a strong consensus among them. Therefore, the findings reveal that digital mentoring has a significant and positive influence on enhancing teachers' instructional competence, teaching strategies, confidence in the classroom, and overall effectiveness within secondary schools in Osun State.

Research Question 2: Influence of Digital Mentoring on Teachers' Technological Competence

Table 3:Influence of Digital Mentoring on Teachers' Technological Competence

S/N	Item	SA (n, %)	A (n, %)	D (n, %)	SD (n, %)	Mean	SD
6.	Digital mentoring has improved my ability to use ICT tools for teaching.	85 42.5%	90 45.0%	20 10.0%	5 2.5%	3.28	0.67
7.	I am more confident using online educational platforms because of digital mentoring.	80 40.0%	95 47.5%	20 10.0%	5 2.5%	3.25	0.68

S/N	Item	SA (n, %)	A (n, %)	D (n, %)	SD (n, %)	Mean	SD
8.	I have acquired new skills in integrating technology into my lesson delivery via digital mentoring.	75 37.5%	100 50.0%	20 10.0%	5 2.5%	3.23	0.67
9.	I can solve basic technical problems during lessons as a result of digital mentoring.	70 35.0%	100 50.0%	25 12.5%	5 2.5%	3.20	0.73
10.	Digital mentoring has encouraged me to explore new educational technologies.	78 39.0%	92 46.0%	25 12.5%	5 2.5%	3.22	0.71
	Aggregate Weighted Mean / SD					**3.24**	**0.69**

The information in Table 2 shows that a large number of teachers think that digital mentoring has a strong positive effect on their technological competence. For each statement provided, a large majority of teachers either strongly agreed or agreed. For instance, 87.5 percent, which is 175 out of 200 teachers, agreed or strongly agreed that digital mentoring has helped them improve their ability to use ICT tools for teaching, and 87.5 percent also stated that they felt more confident when using online educational platforms. Similar patterns of positive responses can be seen regarding the acquisition of new technological skills, the ability to solve technical problems during lessons, and the encouragement to explore new educational technologies. The overall weighted mean of 3.24 on a scale of 4 confirms that there is a high level of agreement with these positive statements about technological competence, and the low standard deviation of 0.69 shows that most teachers had similar and positive responses. Therefore, it can be said that digital mentoring significantly improves the technological competence of teachers in Osun State. The high levels of agreement and the consistency in the responses indicate that digital mentoring is effective in enhancing ICT skills, confidence with digital platforms, theintegration of technology into lessons, problem-solving with technology, and the willingness to adopt new educational technologies among teachers.

Research Question 3: Effect of Digital Mentoring on Overall Professional Development

Table 3:Effect of Digital Mentoring on Overall Professional Development

S/N	Item	SA (n, %)	A (n, %)	D (n, %)	SD (n, %)	Mean	SD
11.	Digital mentoring has contributed to my continuous professional growth as a teacher.	90 45.0%	85 42.5%	20 10.0%	5 2.5%	3.30	0.65
12.	My participation in digital mentoring has increased my engagement in professional learning.	85 42.5%	90 45.0%	20 10.0%	5 2.5%	3.28	0.66
13.	I collaborate more with colleagues as a result of digital mentoring.	80 40.0%	95 47.5%	20 10.0%	5 2.5%	3.28	0.66
14.	Digital mentoring has made me more aware of current trends in education.	88 44.0%	90 45.0%	17 8.5%	5 2.5%	3.30	0.64
15.	My problem-solving skills as a teacher have improved through digital mentoring.	85 42.5%	92 46.0%	18 9.0%	5 2.5%	3.29	0.65
	Aggregate Weighted Mean / SD					**3.29**	0.65

The results found in Table 3 show that teachers have a strong belief that digital mentoring is very beneficial for their overall professional development. For all items listed, a large majority of teachers either strongly agreed or agreed. For instance, 87.5 percent, which is 175 out of 200 teachers, strongly agreed or agreed that digital mentoring has played a role in their continuous professional growth as teachers. Likewise, there were high levels of agreement noted regarding increased engagement in professional learning, better collaboration with colleagues, improved awareness of current educational trends, and enhanced problem-solving skills. The overall weighted mean of 3.29 on a 4-point scale indicates a very high level of agreement across all items, and the low standard deviation of 0.65 implies that the responses were consistently positive and closely grouped around the mean. The findings suggest that

digital mentoring has a significant impact on the professional development of teachers in Osun State. Teachers widely recognise its importance in promoting ongoing professional growth, encouraging participation in professional learning activities, facilitating collaboration, keeping them informed about educational trends, and improving their problem-solving skills. The consistency and strength of these positive views highlight the effectiveness of digital mentoring as a means for professional advancement among secondary school teachers.

Research Question 4: Research Question 4: Challenges Encountered in Digital Mentoring

Table 4:Research Question 4: Challenges Encountered in Digital Mentoring

S/N	Item	SA (n, %)	A (n, %)	D (n, %)	SD (n, %)	Mean	SD
16.	I experience difficulties accessing reliable internet for digital mentoring activities.	60 30.0%	80 40.0%	45 22.5%	15 7.5%	2.93	0.89
17.	Lack of digital devices makes it challenging to participate in digital mentoring.	55 27.5%	75 37.5%	55 27.5%	15 7.5%	2.85	0.93
18.	I do not receive enough training or support to use digital mentoring platforms effectively.	50 25.0%	90 45.0%	45 22.5%	15 7.5%	2.85	0.91
19.	My workload makes it difficult to participate in digital mentoring activities regularly.	60 30.0%	85 42.5%	40 20.0%	15 7.5%	2.95	0.87
20.	Technical issues often disrupt my participation in digital mentoring programmes.	58 29.0%	80 40.0%	47 23.5%	15 7.5%	2.88	0.91
	Aggregate Weighted Mean / SD					**2.89**	**0.90**

The results shown in Table 4 show that teachers have moderate but noticeable challenges when it comes to taking part in digital mentoring activities. More than half of the respondents for each item agreed or strongly agreed that these challenges are present. For example, 70% of teachers, which is 140 out of 200, said they have problems with accessing reliable internet, and 65%, or 130 out of 200, mentioned that the lack of digital devices is a challenge. A significant number also agreed or strongly agreed about challenges related to insufficient training or support, which was 70%, a heavy workload at 72.5%, and technical issues at 69%. The overall weighted mean of 2.89 on a 4-point scale indicates that, on average, respondents tended to agree that these barriers exist. The standard deviation of 0.90 is relatively high, showing some variability in the responses. This suggests that while many teachers face these problems, the level of difficulty may differ from one individual to another. The findings show that teachers in Osun State often deal with obstacles like unreliable internet access, not enough digital devices, a lack of training or support, heavy workloads, and technical problems when participating in digital mentoring. While these challenges are widespread, the degree of their impact might not be the same for everyone, highlighting the need for better infrastructure, improved support, and targeted solutions to help all teachers engage effectively in digital mentoring.

Table 5: Linear Regression Analysis of the Impact of Digital Mentoring on Teachers' Professional Development

Model	Unstandardized Coefficient (B)	Std. Error	Standardized Coefficient (Beta)	t	p-value	R	R^2	F	Sig. (F)
Constant	1.215	0.188	—	6.466	0.000	0.52	0.27	74.89	0.000
Digital Mentoring	0.575	0.067	0.52	8.656	0.000				

Table 5 presents the results of the linear regression analysis regarding the effect of digital mentoring on the professional development of teachers. The regression coefficient for digital mentoring is B equal to 0.575, with a p value less than 0.05, which suggests that there is a significant positive effect of digital mentoring on the professional development of teachers in Osun State. The model accounts for 27 percent of the variance in professional development, indicated by R squared equal to 0.27, and the overall regression is significant with an F value of 74.89 and a p value less than 0.05. Therefore, the null hypothesis is rejected, which confirms the assertion that digital mentoring has a significant impact on the professional development of teachers.

Discussion of Findings

The findings of this study align closely with and provide additional support for existing empirical research regarding the effects of digital mentoring on the professional development of teachers. The study first showed that digital mentoring has a significant positive effect on the instructional practices of teachers in Osun State. This conclusion is supported by high average mean scores and a strong consensus among respondents indicating that digital mentoring assists in lesson planning, delivery, and the adoption of innovative teaching methods. This finding agrees with the results of Hussain et al. (2025), who reported that digital mentoring programmes improve teacher competence, confidence, and professional collaboration, particularly in educational settings with limited resources. Similarly, Uzezi et al. (2025) found that science teachers involved in digital mentoring exhibited higher levels of professional competence and teaching effectiveness compared to those who relied only on traditional teaching methods.

Secondly, the results indicate that digital mentoring has a positive impact on teachers' technological competence. Teachers noted improvements in their ability to utilise ICT tools, their confidence with online platforms, and their skills in incorporating technology into lessons. These findings reflect those of Addai-Poku et al. (2024) and Tripon (2025), who concluded that mentoring programmes supported by technology enhance teachers' digital competence, their participation in professional learning communities, and their overall instructional performance. The evidence from the present study that digital mentoring fosters exploration of new educational technologies also supports the findings of Arowolo (2025) and Uzezi (2025), who noted increased confidence and capability in integrating digital tools among teachers who received mentoring.

Moreover, this study observed that digital mentoring improves overall professional development by increasing teachers' involvement in continuous learning, collaboration with colleagues, awareness of current trends, and problem-solving skills. These results are corroborated by the work of J Jolimate (2025), who found that remote, technology-mediated mentoring resulted in immediate improvements in lesson planning, classroom management, and ICT integration skills for novice teachers. Additionally, the development of professional learning communities and peer networks through digital mentoring, as highlighted by

Gcabashe (2024), was reflected in the high collaboration and engagement scores among the respondents in this study.

However, the research also identified ongoing challenges that limit the effective use of digital mentoring. Issues such as unreliable internet access, insufficient digital devices, inadequate training and support, heavy workloads, and technical issues were frequently mentioned by teachers. These challenges are consistent with the findings of Egbai and Uzoigwe (2026), who pointed out that infrastructural limitations and a lack of digital skills among older educators continue to hinder the full advantages of digital mentoring. Furthermore, Ifarajimi (2025) highlighted that while digital mentoring is essential for teacher retention and instructional capacity, fragmented and poorly funded institutional frameworks in Nigerian public schools restrict its effectiveness, a situation also observed in the current study.

Overall, the findings reinforce the empirical consensus that digital mentoring is an important and effective approach for improving teachers' professional development, technological self-efficacy, and instructional quality, particularly in environments with limited access to traditional professional development resources. However, as both the empirical review and this study indicate, the sustainability and effectiveness of digital mentoring rely on addressing infrastructural and institutional challenges. There is a clear necessity for educational policymakers and stakeholders to invest in strong digital infrastructure, ongoing training, and systematic support to fully realise the benefits of digital mentoring for teachers in Osun State and elsewhere.

Conclusion

This study looked into how digital mentoring affects the professional development of secondary school teachers in Osun State. The findings showed that digital mentoring has a notable positive impact on teachers' improvement in instruction, their ability to use technology, and their overall growth in their profession. Teachers who took part in digital mentoring said they had better lesson planning, they used new teaching methods more, felt more confident using ICT, and were more involved in collaborative professional learning. However, the study also found ongoing problems such as poor digital infrastructure, not enough access to devices, lack of adequate training and support, and heavy workloads, which can limit the advantages that digital mentoring can provide. These findings align with earlier studies done in Nigeria and other countries that indicate digital mentoring helps improve teacher skills, confidence and teamwork, particularly in areas with limited resources. Nevertheless, to make digital mentoring more effective and long-lasting, it is important to tackle issues related to infrastructure, institutions, and training. In conclusion, the study states that digital mentoring is a useful and effective method for improving teachers' professional development and suggests that it should be systematically included in teacher development plans in Osun State and other similar areas.

Recommendations

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

1. The Osun State Ministry of Education along with school authorities needs to develop and put into action formal digital mentoring programmes across secondary schools so that there can be continuous professional development among teachers.

2. The government and educational stakeholders ought to invest in making sure there is reliable internet connectivity, the provision of digital devices, and the maintenance of ICT infrastructure in schools so that there can be equitable access to digital mentoring opportunities.
3. Regular training sessions ought to be organised with the aim of improving teachers' digital literacy and competency in the use of online mentoring platforms. There should be support systems established to help teachers when they encounter technical issues.
4. Schools ought to facilitate the creation of online professional learning communities where teachers can share their experiences, resources and best practices so that the collaborative aspect of digital mentoring can be enhanced.

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