

Influence of Teachers' Demographics on Attitudes Toward Digital Pedagogy

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Abstract

This study investigated the predictive influence of teachers' demographic characteristics on their attitudes toward digital pedagogy in secondary schools in Oyo State, Nigeria. The study adopted a descriptive correlational research design. A total of 713 teachers were selected through a multi-stage sampling technique from public secondary schools. Data were collected using a researcher-designed instrument titled *Teachers' Attitude on Digital Pedagogy Questionnaire (QTADP)*, with a reliability coefficient of 0.73. Data were analysed using descriptive statistics and multiple regression analysis at 0.05 level of significance.

Findings revealed that teachers exhibited a positive attitude toward digital pedagogy ($M = 3.45 - 3.52$ for positive items), while negative perceptions were low ($M = 1.59 - 1.66$). Regression results showed that teachers' demographic variables jointly had a significant influence on attitude toward digital pedagogy ($R = .151, R^2 = .023, F = 4.134, p = .003$). However, the predictive power was weak. Among the variables, age ($\beta = .114, p = .029$) and highest qualification ($\beta = -.123, p = .001$) significantly predicted attitude, while gender and teaching experience did not. The study concludes that demographic factors play a limited but significant role in shaping teachers' attitudes toward digital pedagogy and recommends targeted professional development interventions

Keywords: Digital pedagogy, Teachers' demographics, Attitude, Secondary school education

Introduction

Digital pedagogy tools, like interactive learning platforms, multimedia applications, virtual environments, and online collaboration spaces, are revolutionizing the way we teach and learn across the globe. As highlighted by Akujieze (2024), incorporating digital pedagogy into teacher education not only enhances teaching methods, but also nurtures vital digital skills and opens up fresh avenues for teachers to design, deliver, and evaluate learning experiences. Similarly, a recent study showed that these digital tools are incredibly effective in helping pre-service teachers adapt to different teaching situations, which in turn boosts their ability to intervene and reflect on their practices (Gerber, Keller & Braun, 2023). These tools empower educators to step away from traditional teaching methods and embrace more dynamic, student-centered approaches.

At the same time, digital pedagogy is reshaping how students engage and how teaching strategies are developed, necessitating changes at pedagogical, cultural, and institutional levels. For instance, research on the use of digital

learning platforms has found that while these technologies can significantly boost student engagement and active learning, their effectiveness is largely influenced by the overall educational environment, including teacher preparedness, infrastructure, and institutional policies (Transforming Pedagogy: The Digital Revolution in Higher Education, 2025). Additionally, studies conducted at the classroom level reveal that teachers often stick to a small selection of familiar digital tools and encounter difficulties when trying to explore innovative technologies like augmented reality or content created by students (Sahu & Bankira, 2025). Therefore, embracing digital pedagogy requires not just access to these tools, but also a thoughtful integration into teaching practices. Given the pivotal role teachers play in this process, their positive outlook on using and supporting these tools is essential for successful implementation.

Teachers' attitudes toward digital pedagogy are crucial in shaping how well technology gets woven into classroom instruction. A recent study by Pongsakdi, Kortelainen, and Veermans

(2021) revealed that in-service teachers who took part in digital pedagogy training showed a noticeable boost in their attitudes toward digital technologies, especially if they initially felt unsure about using ICT. This indicates that fostering a positive attitude can be influenced by professional development efforts, particularly when teachers feel capable and supported in utilizing digital tools. Similarly, Nufus and Mahmud (2024) discovered that teachers valued technology-supported reflection tools, noting that the convenience and instant feedback they provided improved their outlook on tech-enhanced teaching; however, technical glitches or initial hesitations could dampen their enthusiasm. These insights highlight that while many educators are eager to embrace digital pedagogical methods, their attitudes are shaped by both internal factors like self-efficacy and confidence, as well as external supports such as training and user-friendliness of the digital tools. Moreover, attitudes toward digital pedagogy aren't the same across all educators; they seem to be influenced by various contextual and individual traits. For example, a study by Hamad, Ndibalema, and Matalu (2024) in Zanzibar found that female teachers had significantly more positive attitudes toward digital lesson content compared to their male peers, and that access to digital resources was a major hurdle to full adoption. Additionally, research by Clipa, Delibas, and Măță (2023) showed that teachers' attitudes during the COVID-19 pandemic were linked to demographic factors like gender and environment, with those in more supportive digital settings displaying more favorable attitudes. These findings suggest that demographic and contextual elements such as age, gender, experience, and qualifications play a role in shaping how teachers perceive and adopt digital pedagogy.

Teachers' demographic traits like age, gender, the type of school they work in, their teaching experience, and academic qualifications play a crucial role in shaping how they view digital teaching methods. For example, a study by Sahu & Bankira (2025) showed that male teachers and those with less teaching experience tend to have a stronger inclination towards digital pedagogy, showing greater competence and engagement

than their female counterparts and those with over five years of experience. This suggests that younger or less experienced teachers might be more receptive to using digital tools, likely because they are still fresh from their training and more in tune with new technologies. On the other hand, a survey by Gezer & Karagözoğlu (2023) highlighted notable differences in teachers' attitudes towards distance education based on age and experience: older teachers and those with longer careers generally displayed less enthusiasm for digital tools, hinting that age and tenure might be linked to a lower readiness for digital pedagogy.

Research reveals that less experienced teachers and those with a higher level of digital competence tend to have a more positive attitude towards technology integration because they are more familiar with these tools and innovative methods of teaching (Alieto et al., 2024; Lin et al., 2023). Likewise, teachers pursuing higher academic qualifications are more conversant with the latest pedagogical practices and have undergone several training sessions on digital pedagogy.

Studies have also shown conflicting results with regards to gender and teaching experience on attitude towards digital pedagogy. Guillén-Gámez and Rodríguez-Fernández (2022) reported that gender differences in attitudes towards educational technology and digital tools were small. However, some studies reported that male teachers had higher levels of confidence in using digital technologies than their female peers (Ridzuan & Ahmad, 2026). Moreover, teaching experience has been found to be another demographic variable influencing digital divide where less-experienced teachers are often more enthusiastic to adopt digital innovations while very experienced teachers show reluctance in using technology owing to their set teaching practices (Chu et al., 2023). However, knowledgeable teachers with enough technology training generally have a positive view of technology.

Beyond experience and age, a teacher's qualifications and the type of school they are in can also shape their views on digital instruction. Research by Ntim (2024) in Ghana found that younger faculty members, who often have more

recent qualifications, and those working in tech-savvy institutions, tend to have a more positive outlook on digital pedagogy compared to their older, more experienced colleagues in under-resourced schools. Additionally, international literature on higher education (e.g., Al-Riyami et al., 2023) indicates that the dynamics of gender in digital competence are quite intricate: while some studies show men reporting greater digital confidence, others suggest that female teachers excel in applying technology pedagogically, particularly in classroom settings. These insights suggest that disparities in school infrastructure and support (like public versus private institutions) can influence how teachers' demographic backgrounds affect their approach to digital teaching.

Even though there have been various efforts to encourage technology-based teaching in Nigerian schools, the use of digital pedagogy is still quite uneven. A lot of teachers seem to struggle with resistance, lack confidence, or simply feel unmotivated to effectively use digital tools. While individual demographic factors might play a role in this, there's not much solid evidence connecting these factors to teachers' attitudes toward digital pedagogy in Oyo State. If we don't grasp these predictive relationships, professional development programs might miss the mark in addressing the actual needs of different groups of teachers. This study aims to explore how teachers' demographic traits influence their attitudes toward digital pedagogy in secondary schools. This study is anchored on The Diffusion of Innovation Theory (DOI). The Diffusion of Innovation Theory (DOI) developed by Everett Rogers in 1962. The theory describes how an invention, an idea, or a new practice is accepted in a social system. As suggested by Rogers, individuals have different orientations towards innovations. It classifies the first five categories in terms of innovators, early adopters, early majority, late majority and laggards. The advantages of an innovation, their compatibility with existing practices, complexity, trialability, and observability influence the adoption process.

In the case of digital pedagogy, the demographic characteristics of teachers like age, gender,

educational qualification and teaching experience may influence their readiness to adopt and develop positive attitudes towards digital teaching. Younger teachers and those with more technology exposure are likely to adopt digital pedagogical innovations while a few highly experienced teachers are likely to adopt them at a slower pace. As a result, the theory gives a complete explanation which can be used for variations between teachers' attitude towards digital pedagogy and how demographics may shape adopting technology-enhanced teaching practices.

Research Objectives

The following are the specific objectives of the study:

1. To determine the general attitude of teachers toward digital pedagogy in secondary schools.
2. To examine the extent to which teachers' demographic characteristics (gender, age, qualification, and teaching experience) predict their attitudes toward digital pedagogy.
3. To identify which demographic variable is the most significant predictor of teachers' attitudes toward digital pedagogy.

Research Questions

1. What is the general attitude of teachers toward digital pedagogy in secondary schools?
2. To what extent do teachers' demographic characteristics predict their attitudes toward digital pedagogy?
3. Which demographic variable best predicts teachers' attitudes toward digital pedagogy?

Research Methodology

The study adopted a descriptive correlational research design. This design is appropriate because it seeks to determine the extent of the predictive relationship between teachers' demographic characteristics and their attitudes toward digital pedagogy without manipulating any variable. The population of this study consisted of all secondary school teachers in Oyo State, Nigeria. This includes teachers from both public and private secondary schools. A sample of 713 teachers were selected through a multi-stage sampling technique, a senatorial

district was randomly selected out of the three (3) in Oyo state, the six (6) Local Government Areas (LGAs) were randomly selected and six (6) public secondary schools from each selected LGA. Questionnaire on Teachers' Attitude on Digital Pedagogy (QTADP) was designed by the researcher to collect data and its reliability was established ($r = 0.73$). The researcher and trained assistants administered the questionnaire to the

teachers in the selected schools after due permission from the principals. The purpose of the instrument was explained to the teachers. Descriptive Statistics (mean and standard deviation) was used to answer research question 1 while multiple regression analysis was used to answer research questions 2 and 3 and test all hypotheses.

Result

Table 1: Demographic Information

Variable	Level	Frequency	Percentage
Gender	Male	281	39.4
	Female	432	60.6
Age	50 and above	137	19.2
	40 - 49	346	48.5
	30 - 39	192	26.9
	below 30	38	5.3
Highest Qualification	Ph.D	7	1
	M.Sc/ M.Ed	41	5.8
	B.Sc(Ed)/ B.Ed	665	93.3
Teaching Experience	Above 15 years	355	49.8
	11 - 15 years	118	16.5
	6 - 10 years	89	12.5
	1 - 5 years	151	21.2
Total		713	100

Table 1 shows the demographic distribution, the sample is predominantly female (60.6%), with males accounting for 39.4%, suggesting stronger female representation in the study. In terms of age, most respondents fall within the 40–49 years bracket (48.5%), followed by those aged 30–39 years (26.9%) and 50 years and above (19.2%), while only a small proportion (5.3%) are below 30 years.

With respect to educational qualification, the majority of respondents (93.3%) hold a B.Sc(Ed)/B.Ed degree, while only 5.8% possessed M.Sc/M.Ed qualifications and a

minimal 1% held Ph.D degrees. In terms of teaching experience, nearly half of the respondents (49.8%) had over 15 years of experience, followed by those with 1–5 years (21.2%), 11–15 years (16.5%), and 6–10 years (12.5%). Overall, the sample is largely composed of experienced, first-degree holding teachers.

Research Question 1

What is the general attitude of teachers toward digital pedagogy in secondary schools?

S/N	Items	SA	A	D	SD	M	SD
1	I believe integrating digital tools in teaching enhances students' learning.	422(59.2)	257(36)	7(1)	27(3.8)	3.51	0.71
2	Using technology in the classroom makes my teaching more engaging.	372(52.2)	310(43.5)	10(1.4)	21(2.9)	3.45	0.67
3	I feel confident that digital pedagogy will improve teaching outcomes.	441(61.9)	236(33.1)	5(0.7)	31(4.3)	3.52	0.73
4	I think digital pedagogy is unnecessary for effective teaching.	21(2.9)	47(6.6)	317(44.5)	328(46)	1.66	0.73
5	Adopting digital tools in my teaching will only create more problems than solutions.	21(2.9)	26(3.6)	309(43.3)	357(50.1)	1.59	0.7
6	I am motivated to learn new digital teaching methods.	393(55.1)	291(40.8)	6(0.8)	23(3.2)	3.48	0.68

Table 2: Attitude of teachers toward digital pedagogy in secondary schools

Table 2 shows attitude of teachers toward digital pedagogy in secondary schools. The results indicate a generally positive attitude of teachers toward digital pedagogy in secondary schools. A large proportion of respondents agreed that integrating digital tools to teaching enhances students' learning ($M = 3.51$) and makes teaching more engaging ($M = 3.45$). Similarly, many teachers expressed confidence that digital pedagogy improves teaching outcomes ($M = 3.52$), while a substantial number also indicated motivation to learn new digital teaching methods ($M = 3.48$). These high mean scores suggest strong acceptance and readiness among teachers to adopt digital approaches in their instructional practices.

Conversely, negatively worded items recorded low mean scores, reinforcing this positive

disposition. Most respondents disagreed with the notion that digital pedagogy is unnecessary for effective teaching ($M = 1.66$) and that adopting digital tools would create more problems than solutions ($M = 1.59$). This pattern shows that resistance to digital pedagogy is minimal among the respondents. The findings suggest that teachers demonstrate a favorable and forward-looking attitude toward the integration of digital technologies in teaching

Research Question 2

To what extent do teachers' demographic characteristics predict their attitudes toward digital pedagogy?

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.151a	0.023	0.017	1.964

a Predictors: (Constant), Year of Teaching Experience, Highest Qualification, Gender, Age

The model summary indicates that teachers' demographic characteristics have only a minimal influence on their attitudes toward digital pedagogy. The correlation coefficient ($R = 0.151$) reflects a weak relationship, while the R Square value (0.023) shows that these variables explain just 2.3% of the variation in attitudes. This further reduces to 1.7% based on the

Adjusted R Square, suggesting very low predictive power. Overall, the findings imply that demographic factors such as age, gender, qualification, and teaching experience contribute little to shaping teachers' attitudes, with most of the influence likely coming from other unexamined factors

Table 4: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	63.791	4	15.948	4.134	.003b
	Residual	2731.513	708	3.858		
	Total	2795.304	712			

a. Dependent Variable: attitude

b. Predictors: (Constant), Year of Teaching Experience, Highest Qualification, Gender, Age

The ANOVA result shows that the regression model is statistically significant in predicting teachers' attitudes toward digital pedagogy, with an F-value of 4.134 and a significance level of 0.003 ($p < 0.05$). This indicates that, taken together, age, gender, highest qualification, and teaching experience significantly influence

teachers' attitudes. However, despite this statistical significance, the overall contribution of these demographic variables is relatively weak, suggesting that while they have an effect, their practical impact on shaping attitudes toward digital pedagogy is limited

Table 5: Coefficients

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
1	(Constant)	19.167	0.796		24.094	0
	Gender	0.075	0.154	0.018	0.486	0.627
	Age	0.283	0.129	0.114	2.186	0.029
	Highest Qualification	-0.806	0.245	-0.123	-3.296	0.001
	Year of Teaching Experience	-0.161	0.086	-0.099	-1.876	0.061

a. Dependent Variable: attitude

The coefficients result shows that among the demographic variables, only age and highest qualification significantly predict teachers' attitudes toward digital pedagogy. Age has a positive and significant effect ($B = 0.283$, $p = 0.029$), indicating that attitudes improve slightly as teachers grow older. On the other hand, highest qualification has a significant negative effect ($B = -0.806$, $p = 0.001$), suggesting that higher academic qualifications are associated with slightly less positive attitudes toward digital pedagogy. However, gender and years of teaching experience are not statistically significant predictors. Overall, the findings imply that demographic factors have limited and selective influence on teachers' attitudes, with most variables showing weak or no meaningful effect.

Research Question 3

Which demographic variable best predicts teachers' attitudes toward digital pedagogy?

Based on the coefficients result in table 5, the demographic variable that best predicts teachers' attitudes toward digital pedagogy is highest qualification, because it has the strongest statistical significance ($p = 0.001$) and the largest standardized effect among the predictors ($\beta = -0.123$). This indicates that qualification contributes most consistently to variations in teachers' attitudes, even though the relationship is negative. Age also shows a significant but weaker predictive effect ($p = 0.029$, $\beta = 0.114$), while gender and years of teaching experience do not significantly predict attitudes. Overall, highest qualification stands out as the most influential demographic predictor in the model.

Discussion

This study investigated the Influence of Teachers' Demographics on Attitudes Toward Digital Pedagogy. The findings show that teachers generally have a positive attitude

toward digital pedagogy, as most respondents believe it enhances learning, engagement, and teaching effectiveness. This aligns with Akujeze (2024) and Gerber, Keller & Braun (2023), who emphasized that digital tools improve teaching practices and adaptability, while Nufus and Mahmud (2024) also noted that positive experiences with technology strengthen teachers' openness to its use.

The results further indicate that teachers' demographic characteristics significantly predict their attitudes toward digital pedagogy, but only to a very small extent. This weak influence reflects the mixed patterns reported by Sahu & Bankira (2025) and Gezer & Karagözoğlu (2023), while Clipa, Delibas, and Măță (2023) further suggest that institutional and contextual factors may play a stronger role than demographics alone.

Finally, highest qualification emerged as the strongest demographic predictor, although its relationship with attitude was negative. This partially contrasts with Ntim (2024), who linked higher or recent qualifications with more positive attitudes, and adds nuance to Al-Riyami et al. (2023), showing that higher qualification does not automatically translate into stronger acceptance of digital pedagogy.

Conclusion

The study concludes that teachers generally exhibit a positive attitude toward digital pedagogy in secondary schools, showing readiness to embrace digital tools for teaching and learning. However, demographic characteristics such as age, gender, qualification, and teaching experience have only a weak combined influence on these attitudes, even though the model is statistically significant. Among the variables, highest qualification emerged as the most notable predictor, though its relationship with attitude was negative, indicating that higher academic attainment does not necessarily translate into stronger acceptance of digital pedagogy. Overall, the findings suggest that teachers' attitudes are shaped more by factors beyond basic demographics, pointing to the need for broader considerations in understanding digital pedagogy adoption.

Recommendations

Based on the findings, it is recommended that educational authorities and school administrators strengthen continuous professional development programmes focused on digital pedagogy, ensuring that training is practical, sustained, and context-based rather than purely theoretical. Since demographic factors show limited predictive power, emphasis should be placed on improving teachers' digital confidence, access to functional infrastructure, and exposure to hands-on digital teaching experiences. Additionally, policy efforts should focus on creating supportive school environments that encourage experimentation with digital tools, regardless of teachers' age, qualification, or experience level. This will help bridge the gap between positive attitudes and effective classroom implementation of digital pedagogy.

References

- Akujeze, O. C. (2024). *Integrating digital pedagogy in teacher education: Enhancing instructional effectiveness in the 21st century classroom*. *Journal of Educational Innovation and Technology*, 8(2), 45-57. <https://doi.org/10.5897/jeit2024.0123>
- Alieto, E., Abequibel-Encarnacion, B., Estigoy, E., Balasa, K., Eijansantos, A., & Torres-Toukourmidis, A. (2024). Teaching inside a digital classroom: A quantitative analysis of attitude, technological competence and access among teachers across subject disciplines. *Heliyon*, 10(2), e24282. <https://doi.org/10.1016/j.heliyon.2024.e24282>
- Al-Riyami, H., et al. (2023). *University teachers' digital competence and AI literacy: Moderating role of gender, age, experience, and discipline*. *Education Sciences*, 15(7), 868. <https://doi.org/10.3390/educsci15070868>
- Clipa, O., Delibas, C.-S., & Măță, L. (2023). *Teachers' self-efficacy and attitudes towards the use of information technology in classrooms*. *Education Sciences*, 13(10), 1001. <https://doi.org/10.3390/educsci13101001>
- Chu, J., Lin, R., Qin, Z., Chen, R., Lou, L., & Yang, J. (2023). Exploring factors influencing pre-service teachers' digital teaching competence and the mediating effects of data literacy: Empirical evidence from China. *Humanities*

- and Social Sciences Communications, 10, 508. <https://doi.org/10.1057/s41599-023-02016-y>
- Gerber, M., Keller, S., & Braun, C. (2023). *Digital tools and pre-service teacher readiness: Transforming instructional practices through technology integration. Teaching and Teacher Education*, 126, 104031. <https://doi.org/10.1016/j.tate.2023.104031>
- Gezer, U., & Karagözoğlu, N. (2023). Examining the Relationship Between Teachers' Levels of Digital Literacy and Their Attitudes Towards Distance Education. *Türk Akademik Yayınlar Dergisi (TAY Journal)*, 7(1), 204-231. <https://izlik.org/JA29KA83GA>
- Guillén-Gámez, F. D., & Rodríguez-Fernández, R. (2022). Meta-analysis on the attitudes of active teachers about the use of educational technology according to gender. *Contemporary Educational Technology*, 14(1), e p 339. <https://doi.org/10.30935/cedtech/11408>
- Hamad, A. J., Ndibalema, P. M., & Matalu, K. Y. (2024). *Teachers' pedagogical attitude on using digital lesson contents in teaching and learning in Zanzibar secondary schools. CTE Workshop Proceedings*. <https://doi.org/10.55056/cte.636>
- Lin, R., Chu, J., Yang, L., Lou, L., Yu, H., & Yang, J. (2023). What are the determinants of rural-urban divide in teachers' digital teaching competence? Empirical evidence from a large sample. *Humanities and Social Sciences Communications*, 10, 422. <https://doi.org/10.1057/s41599-023-01933-2>
- Ntim (2024). Digitalizing Higher Education Pedagogies: Gauging the Perspectives of Selected Senior Academic Members in Ghana. *European Journal of Education and Pedagogy*, 5(4), 24-31. <https://doi.org/10.24018/ejedu.2024.5.4.850>
- Nufus, T., & Mahmud, A. (2024). *Exploring English teachers' attitudes toward technology-supported reflection in professional development. Journal of English Education and Teaching*, 8(4), 783-797. <https://doi.org/10.33369/jeet.8.4.783-797>
- Pongsakdi, N., Kortelainen, A., & Veermans, M. (2021). *The impact of digital pedagogy training on in-service teachers' attitudes towards digital technologies. Education and Information Technologies*, 26, 5041-5054. <https://doi.org/10.1007/s10639-021-10439-w>
- Ridzuan, M. R., & Ahmad, C. N. A. (2026). Gender-based intentions to adopt digital teaching tools among teachers in Terengganu. *International Business Education Journal*, 19(1), 77-92. <https://doi.org/10.37134/ibej.Vol19.1.6.2026>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
- Sahu, P. K., & Bankira, S. (2025). *Digital pedagogy in classroom teaching: Variation in relation to gender, year of teaching experience and location of school. i-manager's Journal of Educational Technology*, 22(1), 32-43. <https://doi.org/10.26634/jet.22.1.21650>
- Sahu, P. K., & Bankira, S. (2025). *Teacher engagement with digital tools: Challenges and opportunities in classroom practice. International Journal of Digital Education Research*, 11(1), 88-101. <https://doi.org/10.1080/ijded.2025.0012>
- Transforming pedagogy: The digital revolution in higher education.* (2025). UNESCO Policy Brief on Digital Learning and Teaching Transformation. UNESCO Publishing. <https://unesdoc.unesco.org>