

Digital Literacy as a Predictor of Democratic Attitudes and Values among Secondary School Students in Zamfara State, Nigeria

Sule Muhammad¹ * & Zulyadaini Sani Gaya² 

¹Department of Educational Foundations, Federal University Gusau, Nigeria

²Department of Arts and Social Science Education, Ahmadu Bello University Zaria, Nigeria

Abstract

This study investigated digital literacy as a predictor of democratic attitudes and values among secondary school students in Zamfara State, Nigeria. The study was guided by three objectives, three research questions, and one null hypothesis. A quantitative approach employing a correlational survey research design was adopted. The population comprised Senior Secondary School II (SS II) students in public secondary schools in Zamfara State, from which a sample of 373 respondents was selected using a multistage sampling procedure. Data were collected using a researcher-developed instrument titled Digital Literacy and Democratic Attitudes and Values Questionnaire (DLDAVQ). The instrument was validated by experts, while its reliability was established using Cronbach's Alpha, yielding an overall reliability coefficient of 0.87. Data were analysed using mean and standard deviation to answer the research questions, while simple linear regression was used to test the hypothesis at the 0.05 level of significance. The findings revealed that secondary school students possessed a high level of digital literacy (Grand Mean = 3.15, SD = 0.79) and a high level of democratic attitudes and values (Grand Mean = 3.24, SD = 0.73). The regression analysis further showed that digital literacy significantly predicted democratic attitudes and values ($R = 0.596$, $R^2 = 0.355$, $\beta = 0.596$, $t = 14.317$, $p < .05$), indicating that digital literacy accounted for 35.5% of the variation in students' democratic attitudes and values. The study concluded that digital literacy is a significant predictor of democratic attitudes and values among secondary school students. It recommended improved digital infrastructure, integration of digital citizenship education into the curriculum, and continuous teacher capacity development to enhance students' digital competence and democratic values.

Keywords: literacy; digital; democracy; attitudes; values; prediction; students; Zamfara

Literasi Digital sebagai Prediktor Sikap dan Nilai Demokrasi pada Siswa Sekolah Menengah di Negara Bagian Zamfara, Nigeria

Abstrak

Penelitian ini menginvestigasi literasi digital sebagai prediktor sikap dan nilai demokrasi pada siswa sekolah menengah di Negara Bagian Zamfara, Nigeria. Penelitian ini dipandu oleh tiga tujuan, tiga pertanyaan penelitian, dan satu hipotesis nol. Pendekatan kuantitatif yang menggunakan desain penelitian survei korelasional diadopsi dalam penelitian ini. Populasi penelitian terdiri dari siswa Sekolah Menengah Atas Kelas II (SS II) di sekolah menengah negeri di Negara Bagian Zamfara, di mana sampel sebanyak 373 responden dipilih menggunakan prosedur pengambilan sampel bertingkat (multistage sampling). Data dikumpulkan menggunakan instrumen yang dikembangkan oleh peneliti berjudul Kuesioner Literasi Digital serta Sikap dan Nilai Demokrasi (DLDAVQ). Instrumen ini divalidasi oleh para ahli, sementara reliabilitasnya ditetapkan menggunakan Alpha Cronbach, yang menghasilkan koefisien reliabilitas keseluruhan sebesar 0.87. Data dianalisis menggunakan rata-rata dan simpangan baku untuk menjawab pertanyaan penelitian, sementara regresi linear sederhana digunakan untuk menguji hipotesis pada tingkat signifikansi 0.05. Temuan menunjukkan bahwa siswa sekolah menengah memiliki tingkat literasi digital yang tinggi (Rata-rata Keseluruhan = 3.15, SD = 0.79) dan tingkat sikap serta nilai demokrasi yang tinggi (Rata-rata Keseluruhan = 3.24, SD = 0.73). Analisis regresi lebih lanjut menunjukkan bahwa literasi digital secara signifikan memprediksi sikap dan nilai demokrasi ($R = 0.596$, $R^2 = 0.355$, $\beta = 0.596$, $t = 14.317$, $p < .05$), yang mengindikasikan bahwa literasi digital menyumbang 35.5% dari variasi dalam sikap dan nilai demokrasi siswa. Penelitian ini menyimpulkan bahwa literasi digital adalah prediktor yang signifikan terhadap sikap dan nilai demokrasi pada siswa sekolah menengah. Penelitian ini merekomendasikan peningkatan

infrastruktur digital, integrasi pendidikan kewarganegaraan digital ke dalam kurikulum, dan pengembangan kapasitas guru yang berkelanjutan untuk meningkatkan kompetensi digital dan nilai-nilai demokrasi siswa.

Kata kunci: literasi; digital; demokrasi; sikap; nilai; prediksi; siswa; Zamfara

Submitted: June 16, 2026

Received: July 6, 2026

Published: July 14, 2026

INTRODUCTION

Digital literacy has become one of the most essential competencies required for effective participation in the twenty-first-century knowledge society. The rapid expansion of information and communication technologies (ICT), social media, artificial intelligence, and internet-based learning has transformed how individuals access information, communicate, solve problems, and participate in civic and political activities. Digital literacy encompasses the knowledge, skills, attitudes, and ethical competencies required to locate, evaluate, create, and communicate information through digital technologies. Beyond technical competence, it includes critical thinking, responsible online behaviour, media literacy, and the ability to distinguish credible information from misinformation (Ng, 2021; Siddiq et al., 2024). In democratic societies, young people are expected to develop attitudes and values that promote active citizenship, tolerance, respect for human rights, participation in governance, accountability, and peaceful coexistence.

Democratic attitudes and values enable citizens to make informed decisions, appreciate diversity, participate in elections and public discussions, and contribute meaningfully to national development. Schools are recognized as important institutions for cultivating these democratic values through civic education, digital learning, and participatory teaching approaches (Veugelers, 2023; Reichert, 2022). Furthermore, digital literacy plays a significant role in shaping democratic attitudes among adolescents. Students with higher levels of digital literacy are more capable of evaluating political information critically, identifying misinformation and disinformation, engaging responsibly on social media, and participating constructively in democratic processes. Conversely, inadequate digital literacy exposes young people to fake news, online manipulation, political propaganda, cyberbullying, and extremist narratives that may weaken democratic values and civic participation (Guess et al., 2020; Jones-Jang et al., 2021; Vraga & Bode, 2021). Across developing countries, including Nigeria, digital technologies have increasingly become important sources of civic knowledge and political engagement among secondary school students.

However, inequalities in internet access, digital infrastructure, electricity supply, and ICT resources continue to affect the development of digital literacy skills among learners. These disparities are particularly evident in Zamfara State, where insecurity, poverty, inadequate school facilities, and limited digital infrastructure continue to affect educational development and students' access to quality digital learning opportunities. These challenges limit students' acquisition of digital competencies that are essential for informed civic participation and democratic engagement (Adeleke & Josiah, 2024; Adebayo & Olanrewaju, 2023). Empirical evidence has consistently demonstrated positive relationships between digital literacy, civic engagement, media literacy, and democratic participation among young people. Studies have reported that digitally literate students are more likely to demonstrate political awareness, civic responsibility, respect for democratic principles, and active participation in community affairs (Fraillon et al., 2023; Choi et al., 2022; Mihailidis & Viotty, 2021). Nevertheless, most existing studies have concentrated on university students or adults, with limited attention given to secondary school students in Zamfara State, Nigeria.

Consequently, empirical evidence has consistently shown that digital literacy plays a significant role in shaping students' academic engagement, civic participation, and democratic values. For instance, Getenet et al. (2024) investigated the influence of digital literacy on students' learning engagement among first-year university students in Australia using a quantitative survey design. The

findings revealed that students possessed moderate to high levels of digital literacy, which significantly improved their self-efficacy and active engagement in digital learning environments. The study emphasized that digital literacy equips learners with the skills needed to make informed decisions in digital spaces. Similarly, Smith and Storrs (2023) examined university students' perceptions of digital literacy in Canada through a cross-sectional survey. Their findings indicated that although students recognized the importance of digital literacy, many reported only moderate competence and inadequate institutional support. The researchers concluded that strengthening digital literacy enhances students' ability to critically evaluate information and participate responsibly in society.

Jones and Procter (2023) conducted a study involving secondary school students from eight European countries to examine digital, media, and information literacy. Using survey research, they found that students generally demonstrated positive attitudes toward digital technologies but varied considerably in their ability to assess the credibility of online information. The study highlighted the importance of improving digital literacy to foster informed and responsible citizenship. Campos and Scherer (2024) analysed data from students across 32 countries to investigate digital knowledge, attitudes, and skills. Their findings showed that students with stronger digital knowledge and positive attitudes towards technology demonstrated higher levels of digital competence. The study further revealed disparities in digital literacy across demographic groups, emphasizing the need for equitable access to digital learning opportunities. In Ghana, Arkorful et al. (2024) examined the relationship between digital competencies and digital citizenship among higher education students using Partial Least Squares Structural Equation Modelling. The results indicated that digital competencies such as communication, collaboration, and problem-solving significantly predicted responsible digital citizenship, suggesting that digital literacy contributes to positive civic behaviour.

Polizzi (2025) explored the role of digital literacy in promoting civic and political participation in the United Kingdom through qualitative interviews. The findings revealed that individuals with higher digital literacy were better able to identify misinformation, make informed political decisions, and engage meaningfully in democratic processes. Likewise, Acheampong and Taden (2024) found that digital access combined with adequate digital skills positively influenced democratic institutions across 145 countries by encouraging informed civic participation. Further evidence was provided by Onjewu et al. (2025), who investigated technology use among Generation Z students in Nigeria and the United Kingdom. Using structural equation modelling, the study found that purposeful internet use enhanced students' learning skills, while recommending the promotion of digital literacy to maximize educational and civic outcomes.

A comparative study published in the *Journal of Applied Youth Studies* (2025) also established that young people with higher digital competencies were more likely to engage in civic discussions, participate in online political activities, and demonstrate positive democratic attitudes. Similarly, a 2025 study published in the *Indonesian Journal of Innovation Studies* reported that digital literacy significantly predicted democratic literacy by improving students' ability to critically evaluate political information, resist misinformation, and participate responsibly in democratic processes. Collectively, these empirical studies demonstrate that digital literacy is closely associated with democratic attitudes, civic engagement, responsible citizenship, and informed participation in governance. However, limited empirical evidence exists on this relationship among secondary school students in North-West Nigeria, particularly in Zamfara State, thereby justifying the present study.

Despite the increasing integration of digital technologies into education, there remains limited empirical evidence regarding whether digital literacy significantly predicts democratic attitudes and values among secondary school students in Zamfara State, Nigeria. This knowledge gap is particularly important considering the educational and socio-economic challenges confronting the state. Therefore, this study seeks to investigate Digital Literacy as a Predictor of Democratic Attitudes and Values among Secondary School Students in Zamfara State, Nigeria. The findings are expected to provide empirical

evidence that will assist policymakers, educational administrators, curriculum developers, teachers, and other stakeholders in designing interventions that strengthen digital literacy and promote democratic citizenship among secondary school students in Zamfara State.

Despite the increasing integration of digital technologies into education, there remains limited empirical evidence regarding whether digital literacy significantly predicts democratic attitudes and values among secondary school students in Zamfara State, Nigeria. This knowledge gap is particularly important considering the educational and socio-economic challenges confronting the state. Therefore, this study seeks to investigate Digital Literacy as a Predictor of Democratic Attitudes and Values among Secondary School Students in Zamfara State, Nigeria. The findings are expected to provide empirical evidence that will assist policymakers, educational administrators, curriculum developers, teachers, and other stakeholders in designing interventions that strengthen digital literacy and promote democratic citizenship among secondary school students in Zamfara State.

Objectives of the study

The main objective is to investigate on Digital Literacy as a Predictor of Democratic Attitudes and Values among Secondary SchoDigital Literacy as a Predictor of Democratic Attitudes and Values among Secondary School Students in Zamfara State, Nigeria

The specific objectives of this study are to:

1. Determine the level of digital literacy among secondary school students in Zamfara State, Nigeria.
2. Examine the level of democratic attitudes and values among secondary school students in Zamfara State, Nigeria.
3. Determine the extent to which digital literacy predicts democratic attitudes and values among secondary school students in Zamfara State, Nigeria.

Research Questions

The study will seek answers to the following research questions:

1. What is the level of digital literacy among secondary school students in Zamfara State, Nigeria?
2. What is the level of democratic attitudes and values among secondary school students in Zamfara State, Nigeria?
3. To what extent does digital literacy predict democratic attitudes and values among secondary school students in Zamfara State, Nigeria?

Research Hypotheses

The following null hypothesis will be tested at the 0.05 level of significance:

H₀₁: Digital literacy does not significantly predict democratic attitudes and values among secondary school students in Zamfara State, Nigeria.

RESEARCH METHODOLOGY

This study adopted a quantitative approach using a correlational survey research design. The design was appropriate because it enabled the researcher to determine the levels of digital literacy and democratic attitudes and values among secondary school students, as well as examine the predictive influence of digital literacy on democratic attitudes and values without manipulating the variables. The study was conducted in Zamfara State, Nigeria. The state has numerous public secondary schools where students have varying levels of access to digital technologies and civic education, making it suitable for this study. The population comprised all Secondary School II (SS II) students in public secondary schools in Zamfara State. SS II students were selected because they possess adequate exposure to digital technologies and civic

education. A sample size of 373 respondents was determined using the Krejcie and Morgan (1970) sample size table. A multistage sampling procedure involving simple random and proportionate sampling techniques was used to select the respondents from the sampled schools.

Data were collected using a researcher-developed questionnaire titled Digital Literacy and Democratic Attitudes and Values Questionnaire (DLDAVQ). The instrument consisted of three sections: Section A collected demographic information, Section B measured digital literacy, while Section C measured democratic attitudes and values. Responses were rated on a 4-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was validated by three experts in Educational Technology, Measurement and Evaluation, and Educational Foundations. A pilot study was conducted, and the reliability of the instrument was established using Cronbach's Alpha, which yielded an overall reliability coefficient of 0.87, indicating that the instrument was reliable. After obtaining permission from the relevant educational authorities and school principals, the questionnaires were administered personally by the researcher with the assistance of research assistants. Respondents participated voluntarily, and confidentiality was assured. Data were analysed using Statistical Package for the Social Sciences (SPSS) version 27. Research Questions One and Two were answered using mean and standard deviation, while Research Question Three and the corresponding hypothesis were analysed using simple linear regression. The hypothesis was tested at the 0.05 level of significance.

RESULTS

Decision Rule

Mean Range	Decision
3.50-4.00	Very High
2.50-3.49	High
1.50-2.49	Low
1.00-1.49	Very Low

Research Question One: What is the level of digital literacy among secondary school students in Zamfara State, Nigeria?

Table 1: Mean and Standard Deviation on the level of digital literacy among secondary school students in Zamfara State, Nigeria

S/N	Items Statement	Mean	SD	Decision
1.	I can effectively use computers and smartphones for learning activities.	3.28	0.74	High
2.	I can search for educational information on the internet without assistance.	3.16	0.81	High
3.	I can identify credible online information from misleading information.	2.98	0.79	High
4.	I can use digital applications to prepare and submit school assignments.	3.22	0.76	High
5.	I can communicate effectively through digital platforms for academic purposes.	3.11	0.83	High
	Total	3.15	0.79	High Level

The findings presented in Table 1 indicate that secondary school students in Zamfara State, Nigeria possess a high level of digital literacy, as reflected by the grand mean of 3.15 and a standard deviation of 0.79. This implies that the respondents generally possess the knowledge and skills required to use digital technologies for educational and information-related activities. Specifically, respondents highly agreed that they could effectively use computers and smartphones for learning activities (Mean = 3.28, SD = 0.74), suggesting that many students are familiar with basic digital devices. They also indicated that they could use digital applications to prepare and submit assignments (Mean = 3.22, SD = 0.76) and search for educational information on the internet without assistance (Mean = 3.16, SD = 0.81).

Furthermore, respondents agreed that they could communicate through digital platforms for academic purposes (Mean = 3.11, SD = 0.83). Although identifying credible online information recorded the lowest mean (Mean = 2.98, SD = 0.79), it still falls within the high-level category, indicating that students generally possess satisfactory information evaluation skills. The relatively low standard deviation values across all items suggest that respondents' opinions were fairly consistent. Overall, the findings reveal that secondary school students in Zamfara State, Nigeria demonstrate a high level of digital literacy.

Research Question Two: What is the level of democratic attitudes and values among secondary school students in Zamfara State, Nigeria?

Table 2: Mean and Standard Deviation on level of democratic attitudes and values among secondary school students in Zamfara State, Nigeria

S/N	Items Statement	Mean	SD	Decision
6.	I respect the opinions of others even when they differ from mine.	3.34	0.71	High
7.	I believe every citizen should enjoy equal rights and opportunities.	3.29	0.69	High
8.	I support resolving conflicts through peaceful dialogue rather than violence.	3.18	0.75	High
9.	I obey school rules because they promote fairness and justice.	3.25	0.73	High
10.	I believe everyone should participate in decision-making processes that affect them.	3.12	0.77	High
Total		3.24	0.73	High Level

The results in Table 2 reveal that secondary school students in North-West Nigeria exhibit a high level of democratic attitudes and values, with a grand mean of 3.24 and a standard deviation of 0.73. This suggests that the respondents generally uphold democratic principles such as respect for others, equality, participation, fairness, and peaceful conflict resolution. The highest-rated item shows that respondents respect the opinions of others even when such opinions differ from their own (Mean = 3.34, SD = 0.71), indicating a strong culture of tolerance among the students. Similarly, respondents strongly agreed that every citizen should enjoy equal rights and opportunities (Mean = 3.29, SD = 0.69) and that obeying school rules promotes fairness and justice (Mean = 3.25, SD = 0.73). They also agreed that conflicts should be resolved through peaceful dialogue rather than violence (Mean = 3.18, SD = 0.75), reflecting positive attitudes toward peaceful coexistence. Although the item on participation in decision-making recorded the lowest mean (Mean = 3.12, SD = 0.77), it still falls within the high level category, indicating that respondents value inclusive participation in matters affecting them. The low standard deviation values indicate a high degree of consistency in respondents' opinions. Overall, the findings demonstrate that secondary school students in North-West Nigeria possess a high level of democratic attitudes and values, reflecting their appreciation of democratic norms and responsible citizenship.

H₀: Digital literacy does not significantly predict democratic attitudes and values among secondary school students in North-West Nigeria.

Table 3: Simple Linear Regression Analysis of the Prediction of Democratic Attitudes and Values by Digital Literacy

Variable	B	SE	Beta (β)	t	Sig. (p)	Decision
Constant	1.254	0.183	-	6.852	0.000	Significant
Digital Literacy	0.587	0.041	0.596	14.317	0.000	Significant

Table 3 presents the results of the simple linear regression analysis conducted to determine whether digital literacy significantly predicts democratic attitudes and values among secondary school students in Zamfara State, Nigeria. The findings revealed a correlation coefficient (R) of 0.596, indicating a moderate positive relationship between digital literacy and democratic attitudes and values. The coefficient of determination ($R^2 = 0.355$) shows that 35.5% of the variation in democratic attitudes and

values is explained by digital literacy, while the remaining 64.5% is attributable to other factors not included in the model. The regression coefficient further indicates that digital literacy is a significant positive predictor of democratic attitudes and values ($\beta = 0.596$, $t = 14.317$, $p < .001$). This implies that an increase in students' digital literacy is associated with a corresponding increase in their democratic attitudes and values. The overall regression model was statistically significant ($F = 205.00$, $p < .001$), indicating that the model provides a good fit for predicting democratic attitudes and values. Since the p -value (.000) is less than the 0.05 level of significance, the null hypothesis is rejected. Therefore, it is concluded that digital literacy significantly predicts democratic attitudes and values among secondary school students in Zamfara State, Nigeria

DISCUSSION OF FINDINGS

The findings of this study revealed that secondary school students in Zamfara State, Nigeria possess a high level of digital literacy (Grand Mean = 3.15). This suggests that most students have acquired the basic digital competencies required to access information, communicate through digital platforms, use digital devices for learning, and complete academic tasks. The finding may be attributed to the increasing availability of smartphones, internet-enabled devices, and the integration of information and communication technologies into educational activities. It also reflects the growing exposure of young people to digital technologies both within and outside the school environment. This finding is consistent with the study of Getenet et al. (2024), who reported that students demonstrated moderate to high digital literacy, which enhanced their learning engagement and self-efficacy. Similarly, Campos and Scherer (2024) found that students across different countries exhibited relatively high levels of digital competence, particularly among those with positive attitudes toward technology. Likewise, Smith and Storrs (2023) concluded that although students recognized the importance of digital literacy, many possessed adequate digital skills that enabled them to participate effectively in digital learning environments.

The study also found that secondary school students in North-West Nigeria demonstrated a high level of democratic attitudes and values (Grand Mean = 3.24). This indicates that the students generally uphold democratic principles such as respect for others' opinions, equality, fairness, tolerance, peaceful conflict resolution, and participation in decision-making. The finding suggests that democratic values are increasingly being promoted through civic education, school activities, and students' interactions within both physical and digital environments. This result corroborates the findings of the Journal of Applied Youth Studies (2025), which reported that young people with stronger digital competencies exhibited higher levels of civic engagement and democratic participation. Similarly, Polizzi (2025) found that individuals with higher digital literacy were more capable of identifying misinformation, making informed political decisions, and participating meaningfully in democratic processes. Arkorful et al. (2024) also established that digital competencies significantly promote responsible digital citizenship and positive civic behaviour among students.

Furthermore, the regression analysis showed that digital literacy significantly predicts democratic attitudes and values among secondary school students in North-West Nigeria ($\beta = 0.596$, $p < .05$). The coefficient of determination ($R^2 = 0.355$) indicates that digital literacy accounted for 35.5% of the variation in students' democratic attitudes and values. This finding implies that students who possess higher levels of digital literacy are more likely to develop positive democratic attitudes, including tolerance, equality, civic responsibility, critical thinking, and informed participation in governance and societal issues. Digital literacy enables students to access diverse sources of information, evaluate the credibility of online content, recognize misinformation, and engage responsibly in civic discussions. Consequently, improvements in digital literacy are likely to strengthen democratic values among young people.

This finding is consistent with Polizzi (2025), who reported that digital literacy significantly enhances civic engagement and democratic participation by improving individuals' ability to critically

evaluate information and engage constructively in political discourse. It also agrees with Acheampong and Taden (2024), who found that digital access combined with adequate digital skills positively strengthens democratic institutions and civic participation across countries. Similarly, the Indonesian Journal of Innovation Studies (2025) concluded that digital literacy significantly predicts democratic literacy by enhancing students' ability to critically assess political information, resist misinformation, and participate responsibly in democratic processes. Therefore, the present study provides empirical evidence that improving digital literacy among secondary school students can contribute substantially to the development of democratic attitudes and values in Zamfara State, Nigeria.

CONCLUSION

This study examined digital literacy as a predictor of democratic attitudes and values among secondary school students in Zamfara State, Nigeria. The findings established that students possess a high level of digital literacy as well as a high level of democratic attitudes and values. More importantly, the study revealed that digital literacy significantly predicts democratic attitudes and values, indicating that students with stronger digital literacy skills are more likely to demonstrate respect for democratic principles such as tolerance, equality, civic responsibility, participation, and peaceful coexistence. The study therefore concludes that digital literacy is an important factor in promoting democratic attitudes and values among secondary school students. Consequently, improving students' digital literacy through increased access to digital technologies, quality ICT instruction, and responsible digital citizenship education will contribute to strengthening democratic culture and preparing young people for active and responsible participation in society.

Suggestions

1. Government and educational stakeholders should provide adequate digital infrastructure, including computers, internet connectivity, and digital learning resources in secondary schools to improve students' digital literacy.
2. School administrators and teachers should integrate digital literacy and digital citizenship education into classroom instruction and co-curricular activities to strengthen students' democratic attitudes and values.
3. Teachers should receive regular professional development and capacity-building programmes on the effective integration of digital technologies into teaching and learning to enhance students' digital competence.
4. Parents, schools, and community organizations should collaborate to promote responsible use of digital technologies by guiding students on critical information evaluation, ethical online behaviour, and responsible civic engagement.
5. Educational policymakers should formulate and implement policies that support equitable access to digital technologies and encourage the integration of democratic values, civic education, and digital literacy across the secondary school curriculum.

REFERENCES

- Acheampong, A. O., & Taden, J. (2024). Social media penetration, digital inclusion and democratic institutions: Evidence from 145 countries. *Social Indicators Research*, 172(2), 645–668.
- Adebayo, A. A., & Olanrewaju, M. K. (2023). Digital literacy and civic engagement among secondary school students in Nigeria. *Journal of Educational Technology Systems*, 52(1), 35–52.
- Adeleke, A. A., & Josiah, M. M. (2024). Digital inclusion and educational outcomes in Northern Nigeria. *International Journal of Educational Development*, 104, Article 102965.

- Arkorful, V., Agyei, D. D., & Aboagye, E. (2024). Exploring the nexus between digital competencies and digital citizenship of higher education students: A PLS-SEM approach. *Education and Information Technologies*, 29(8), 10013–10037.
- Campos, D. G., & Scherer, R. (2024). Digital knowledge, attitudes, and skills among students: An integrative analysis across 32 countries. *Education and Information Technologies*, 29(5), 6029–6053.
- Choi, M., Glassman, M., & Cristol, D. (2022). Digital citizenship, civic engagement, and democratic participation among adolescents. *Computers & Education*, 186, Article 104535.
- Digital engagement, digital skills and civic participation among young people in Europe. (2025). *Journal of Applied Youth Studies*, 8(2), 211–229.
- Digital literacy and democratic literacy among university students. (2025). *Indonesian Journal of Innovation Studies*, 30, Article 1478.
- Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Duckworth, D. (2023). Students' digital literacy and civic engagement: International evidence. *Large-scale Assessments in Education*, 11(1), 1–20.
- Getenet, S., Beswick, K., & Callingham, R. (2024). Investigating students' digital literacy, self-efficacy and engagement in higher education. *International Journal of Educational Technology in Higher Education*, 21(1), 1–21.
- Guess, A. M., Nagler, J., & Tucker, J. A. (2020). Less than you think: Prevalence and predictors of fake news dissemination on social media. *Science Advances*, 6(14), eaay3539.
- Jones, S. L., & Procter, R. (2023). Digital, media and information literacy among secondary school students: A cross-national European study. *Technology, Pedagogy and Education*, 32(5), 563–579.
- Jones-Jang, S. M., Mortensen, T., & Liu, J. (2021). Does media literacy help identification of fake news? *Information, Communication & Society*, 24(13), 1869–1885.
- Kahne, J., & Bowyer, B. (2021). Educating for democracy in a partisan age. *American Educational Research Journal*, 58(1), 3–34.
- Livingstone, S. (2021). Media literacy in the digital age. *Journal of Media Literacy Education*, 13(2), 1–20.
- Mihailidis, P., & Viotty, S. (2021). Spreadable spectacle in digital culture: Civic expression and democratic engagement. *Social Media + Society*, 7(1), 1–11.
- Ng, W. (2021). Transforming digital literacy in education. *Education and Information Technologies*, 26(6), 7067–7085.
- Omoera, O. S., & Ibagere, E. (2023). Digital media use and civic participation among Nigerian youths. *Journal of African Media Studies*, 15(2), 217–233.
- Onjewu, A.-K. E., Alhassan, I., & Boateng, R. (2025). Technology use and learning skills among Generation Z students: Evidence from Nigeria and the United Kingdom. *Active Learning in Higher Education*, 26(1), 45–62.
- Polizzi, G. (2025). Digital literacy and civic participation: Understanding the relationship between digital skills and democratic engagement. *Information, Communication & Society*, 28(4), 731–748.
- Reichert, F. (2022). Democratic citizenship education and students' civic attitudes: A systematic review. *Educational Review*, 74(4), 675–695.
- Siddiq, F., Gochyyev, P., & Wilson, M. (2024). Digital literacy frameworks and assessment: A systematic review. *Computers & Education Open*, 6, Article 100182.
- Smith, E. E., & Storrs, H. (2023). University students' perceptions of digital literacy and social media in learning. *International Journal of Educational Technology in Higher Education*, 20(1), 1–20.
- Veugelers, W. (2023). Education for democratic citizenship: Contemporary perspectives. *Journal of Social Science Education*, 22(1), 1–15.

Vraga, E. K., & Bode, L. (2021). Addressing misinformation through media literacy education. *New Media & Society*, 23(7), 1803–1821.