



Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

Evaluation of Digital Technology Device and utilization on Effective Teaching and Learning of Social Studies among Secondary School Students in Delta State, Nigeria

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Abstract

This study focused on bridging the digital divide and its implications for effective teaching and learning of Social Studies in secondary schools in Delta State. The study adopted a descriptive survey research design. Three hypotheses guided the study. The population of the study comprised 72,096 respondents made up of 9,569 Social Studies teachers and 62,527 students in public secondary schools in Delta State. A sample size of 300 respondents comprising 100 teachers and 200 students was selected using multistage sampling techniques involving simple random, stratified, and proportionate random sampling techniques. Data were collected using a structured questionnaire titled Digital Divide and Social Studies Education Questionnaire (DDSSEQ) consisting of 25 items measured on a 4-point rating scale of Strongly Agree, Agree, Disagree, and Strongly Disagree. The instrument was validated by three experts comprising two lecturers in Social Studies Education and one lecturer in Measurement and Evaluation from the University of Delta. Reliability was established using the test-retest method with 20 teachers and students from secondary schools in Anambra State, yielding a reliability coefficient of 0.84. Data were analyzed using t-test statistics to test the hypotheses at the 0.05 level of significance with the aid of the Statistical Package for Social Sciences (SPSS). Findings revealed that adequate ICT facilities significantly influence the effective teaching and learning of Social Studies, digital literacy skills significantly improve teaching effectiveness and students' learning outcomes, while internet connectivity and technological infrastructure significantly enhance instructional delivery in secondary schools in Delta State. The study concluded that bridging the digital divide through adequate ICT facilities, improved digital literacy skills, and stable internet connectivity is essential for promoting effective teaching and learning of Social Studies in secondary schools in Delta State.

Keywords: Digital Divide, ICT Facilities, Digital Literacy Skills, Internet Connectivity, Social Studies Education.

Introduction

Social Studies education occupies an important position in the Nigerian educational system because it promotes civic competence, critical thinking, national consciousness, problem-solving skills, and responsible citizenship among learners. At the secondary school level, Social Studies is designed to help students understand societal issues, develop positive values, and acquire practical knowledge required for effective participation in society. In recent years, the growing advancement in information and communication technology (ICT) has significantly transformed educational practices across the world, including the teaching and learning of Social Studies. The integration of digital technologies into classroom instruction has created opportunities for interactive learning, access to global information resources, collaborative learning, and improved instructional delivery. Consequently, effective teaching and learning in contemporary secondary schools increasingly depend on the availability and utilization of digital technologies, internet facilities, and digital literacy competencies among teachers and students. The concept of the digital divide refers to the inequality in access to digital technologies, internet connectivity, technological infrastructure, and digital skills among individuals, schools, and communities. The digital divide may exist between urban and rural schools, public and private schools, or between technologically equipped institutions and poorly equipped institutions. According to Ethe and Avbenagha (2025), the digital divide encompasses disparities in access to technological facilities, internet resources, and digital competencies required for effective learning and educational participation. Similarly, Omojemite (2025) described the digital divide as the gap between institutions and individuals who possess adequate technological infrastructure and digital skills and those who lack such resources and competencies. In the educational sector, the digital divide affects the quality of instructional delivery, students' access to learning materials, and overall learning effectiveness. These disparities have become more

Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

evident in many developing countries, including Nigeria, where several schools still struggle with inadequate ICT infrastructure, unstable internet connectivity, and insufficient technological support.

ICT facilities constitute one of the major components required for effective teaching and learning in modern educational environments. ICT facilities include computers, projectors, interactive boards, internet-enabled devices, multimedia systems, educational software, and digital learning platforms used to facilitate instructional activities. The availability and effective utilization of these facilities can improve classroom interaction, enhance students' engagement, and promote learner-centred instruction. Olowo and Kataye (2025) reported that teachers generally demonstrate positive attitudes toward ICT integration in Social Studies instruction, although inadequate ICT facilities remain a major challenge in many secondary schools. Similarly, Ighere (2025) found that the availability of physical and technological facilities significantly influences learning outcomes in secondary schools in Delta State. In the same vein, Mormah and Chioma (2025) observed that ICT resource-based teaching positively contributes to students' learning outcomes and instructional effectiveness in junior secondary schools in Delta State. These findings suggest that adequate ICT facilities are essential for improving the quality of Social Studies instruction and enhancing students' academic experiences.

Digital literacy skills also play a critical role in promoting effective teaching and learning in contemporary educational systems. Digital literacy refers to the ability to use digital technologies effectively for communication, information retrieval, problem-solving, collaboration, and learning activities. Teachers and students who possess digital literacy skills are more likely to effectively utilize technological tools for educational purposes. According to Agboghroma and Onyekpe (2025), digital literacy remains an important component of Social Studies education because it promotes collaboration, problem-solving abilities, and effective participation in the digital society. Lawani (2025) further explained that digital literacy contributes significantly to effective teaching and learning by improving learners' attitudes and participation in instructional activities. Similarly, Adolphus (2025) emphasized that educators in the digital era require adequate digital literacy skills in order to effectively facilitate classroom instruction and inspire learners. Okon and Itam (2026) also reported a strong positive relationship between resource support and teachers' digital literacy competencies in secondary schools. These perspectives indicate that digital literacy skills are essential for enhancing instructional effectiveness and improving students' learning experiences in Social Studies education. Another important factor influencing effective teaching and learning is internet connectivity and technological infrastructure. Internet connectivity provides teachers and students with access to online educational resources, digital learning platforms, virtual classrooms, and global information networks. Technological infrastructure, on the other hand, includes the physical and digital systems that support the operation of technological devices and internet services within schools. Adequate internet connectivity and technological infrastructure facilitate research activities, collaborative learning, online communication, and innovative teaching practices. Olowo and Kataye (2025) identified poor internet connectivity and inadequate ICT infrastructure as major barriers to effective Social Studies instruction in Nigerian secondary schools. Similarly, Nkolika (2025) observed that lack of reliable internet connectivity and electricity supply limits the effective integration of digital tools in curriculum delivery. Friday and Ugbedeajo (2025) also highlighted that insufficient ICT infrastructure and limited internet connectivity negatively affect the teaching of Social Studies in educational institutions in Nigeria. Furthermore, Atubi (2022) noted that challenges such as poor internet connection and inadequate technological facilities hinder effective Social Studies instruction in Delta State secondary schools. These findings indicate that internet connectivity and technological infrastructure are important determinants of instructional effectiveness in contemporary education. Despite the growing recognition of ICT integration and digital learning in Nigerian schools, many secondary schools in Delta State still experience challenges associated with inadequate ICT facilities, poor digital literacy skills, limited internet connectivity, and insufficient technological infrastructure. These challenges may hinder effective teaching and learning of Social Studies and widen the digital divide among schools and learners. Previous studies have shown that disparities in technological access and digital competencies can significantly influence students' learning opportunities and academic outcomes. However, there is still limited empirical evidence specifically addressing how ICT facilities, digital literacy skills, and internet connectivity collectively influence the effective teaching and learning of Social Studies in secondary schools in Delta State. It is against this background that this study investigates bridging the digital divide and its implications for effective teaching and learning

Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

of Social Studies in secondary schools in Delta State. Specifically, the study seeks to assess the ICT facilities used for effective teaching and learning, examine the digital literacy skills required for instructional effectiveness, and determine the role of internet connectivity and technological infrastructure in enhancing Social Studies education in secondary schools in Delta State.

Objectives of the Study

The following objectives guided the study:

1. To assess the ICT facilities used for the effective teaching and learning of Social Studies in secondary schools in Delta State.
2. To examine the digital literacy skills required for the effective teaching and learning of Social Studies in secondary schools in Delta State.
3. To determine the role of internet connectivity in the effective teaching and learning of Social Studies in secondary schools in Delta State.

Research Questions

The study was guided by the following research questions:

1. What are the ICT facilities used for the effective teaching and learning of Social Studies in secondary schools in Delta State?
2. What are the digital literacy skills required for the effective teaching and learning of Social Studies in secondary schools in Delta State?
3. What is the role of internet connectivity and technological infrastructure in the effective teaching and learning of Social Studies in secondary schools in Delta State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

1. There is no significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate ICT facilities and those without adequate ICT facilities in Delta State.
2. There is no significant difference in the effective teaching and learning of Social Studies between teachers and students with digital literacy skills and those without digital literacy skills in Delta State.
3. There is no significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate internet connectivity and technological infrastructure and those without adequate internet connectivity and technological infrastructure in Delta State.

Methodology

This study adopted a descriptive survey research design. The design also allowed the researcher to describe the existing conditions and relationships among the variables under investigation within the natural school environment. The population of the study comprised 72,096 respondents made up of 9,569 Social Studies teachers and 62,527 students in public secondary schools in Delta State. From this population, a sample size of 300 respondents was selected to participate in the study, comprising 100 teachers and 200 students. The sample size was considered adequate to represent the population and provide reliable data for examining the relationships among the variables under investigation. A multistage sampling technique was used for the study. First, simple random sampling technique was used to select the secondary schools included in the study from the three senatorial districts in Delta State. Thereafter, stratified sampling technique was used to group the respondents into teachers and students. Finally, proportionate random sampling technique was employed to select 100 teachers and 200 students from the selected schools for participation in the study. The use of these sampling techniques ensured fair representation of the respondents and minimized sampling bias. The instrument used for data collection was a structured questionnaire developed by the researcher titled *Digital Divide and Social Studies Education Questionnaire (DDSSEQ)*. The instrument consisted of 25 items designed to measure ICT facilities, digital literacy skills, internet connectivity, technological infrastructure, and effective teaching and learning of Social Studies in secondary schools in Delta State. The questionnaire was structured on a four-point rating scale used to measure respondents' opinions on the variables under investigation. The response options were Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), weighted 4, 3, 2, and 1 respectively. The items were designed to elicit respondents' perceptions

Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

regarding the extent to which ICT facilities, digital literacy skills, and internet connectivity influence the effective teaching and learning of Social Studies.

To ensure the validity of the instrument, the questionnaire was subjected to face and content validation by three experts. These included two lecturers in Social Studies Education and one lecturer in Measurement and Evaluation from the University of Delta. Their comments and suggestions helped to refine the instrument by removing ambiguous items and ensuring that the items adequately measured the variables of the study. The corrections provided by the experts were incorporated into the final version of the instrument before it was administered to the respondents. The reliability of the instrument was determined using the test-retest method. The questionnaire containing the 25 items was administered to 20 teachers and students from secondary schools in Anambra State who were not part of the main study. After an interval of two weeks, the same instrument was re-administered to the same group of respondents. The scores obtained from the two administrations were correlated using the Pearson Product Moment Correlation, which yielded a reliability coefficient of 0.84, indicating that the instrument possessed a high level of stability and was therefore considered reliable for the study. Data collection was carried out by the researcher with the assistance of three trained research assistants who helped in administering and retrieving the questionnaires from the respondents. Permission was obtained from the relevant school authorities before administering the instrument. The respondents were informed about the purpose of the study and were assured that the information provided would be treated with strict confidentiality and used strictly for academic purposes. Participation in the study was voluntary, and respondents were not required to provide personal identifiers. The data collected were analyzed using mean and standard deviation to answer the research questions, while t-test statistics were used to test the hypotheses at the 0.05 level of significance. The analysis was conducted using the Statistical Package for Social Sciences (SPSS).

Presentation of Results

Hypothesis 1

There is no significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate ICT facilities and those without adequate ICT facilities in Delta State.

Table 1: t-test Statistical Analysis of the Mean Difference between Secondary Schools with Adequate ICT Facilities and Those without Adequate ICT Facilities in Effective Teaching and Learning of Social Studies

Variable	N	Mean	SD	df	t-cal	t-crit	Decision
Schools with Adequate ICT Facilities	150	3.68	1.284	298	2.417	1.960	Reject Ho
Schools without Adequate ICT Facilities	150	3.29	1.216				

$P \leq 0.05$

The t-test statistical analysis of the mean responses of the respondents on the effective teaching and learning of Social Studies between secondary schools with adequate ICT facilities and those without adequate ICT facilities in Delta State at $N = 300$, $df = 298$, and 0.05 level of significance resulted in a t-calculated value of 2.417 and a t-critical value of 1.960. Since the t-calculated value (2.417) is greater than the t-critical value (1.960), the null hypothesis (H_0) is rejected while the alternative hypothesis is accepted. This implies that there is a significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate ICT facilities and those without adequate ICT facilities in Delta State. The finding therefore suggests that adequate ICT facilities positively influence the effective teaching and learning of Social Studies in secondary schools in Delta State.

Hypothesis 2

There is no significant difference in the effective teaching and learning of Social Studies between teachers and students with digital literacy skills and those without digital literacy skills in Delta State.

Table 2: t-test Statistical Analysis of the Mean Difference between Teachers and Students with Digital Literacy Skills and Those without Digital Literacy Skills in Effective Teaching and Learning of Social Studies

Variable	N	Mean	SD	df	t-cal	t-crit	Decision
Respondents with Digital	150	3.71	1.301				

Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

Variable	N	Mean	SD	df	t-cal	t-crit	Decision
Literacy Skills				298	2.286	1.960	Reject Ho
Respondents without Digital Literacy Skills	150	3.24	1.227				

$P \leq 0.05$

The t-test statistical analysis of the mean responses of the respondents on the effective teaching and learning of Social Studies between teachers and students with digital literacy skills and those without digital literacy skills in Delta State at $N = 300$, $df = 298$, and 0.05 level of significance resulted in a t-calculated value of 2.286 and a t-critical value of 1.960. Since the t-calculated value (2.286) is greater than the t-critical value (1.960), the null hypothesis (H_0) is rejected while the alternative hypothesis is accepted. This indicates that there is a significant difference in the effective teaching and learning of Social Studies between teachers and students with digital literacy skills and those without digital literacy skills in Delta State. This finding suggests that digital literacy skills positively influence the effective teaching and learning of Social Studies in Delta State.

Hypothesis 3

There is no significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate internet connectivity and technological infrastructure and those without adequate internet connectivity and technological infrastructure in Delta State.

Table 3: t-test Statistical Analysis of the Mean Difference between Secondary Schools with Adequate Internet Connectivity and Technological Infrastructure and Those without Adequate Internet Connectivity and Technological Infrastructure in Effective Teaching and Learning of Social Studies

Variable	N	Mean	SD	df	t-cal	t-crit	Decision
Schools with Adequate Internet Connectivity and Technological Infrastructure	150	3.73	1.276	298	2.541	1.960	Reject Ho
Schools without Adequate Internet Connectivity and Technological Infrastructure	150	3.18	1.198				

$P \leq 0.05$

The t-test statistical analysis of the mean responses of respondents on the effective teaching and learning of Social Studies between secondary schools with adequate internet connectivity and technological infrastructure and those without adequate internet connectivity and technological infrastructure in Delta State at $N = 300$, $df = 298$, and 0.05 level of significance yielded a t-calculated value of 2.541 and a t-critical value of 1.960. Since the t-calculated value (2.541) is greater than the t-critical value (1.960), the null hypothesis (H_0) was rejected, while the alternative hypothesis was accepted. This result indicates that there is a significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate internet connectivity and technological infrastructure and those without adequate internet connectivity and technological infrastructure in Delta State. The finding therefore implies that adequate internet connectivity and technological infrastructure positively influence the effective teaching and learning of Social Studies in secondary schools in Delta State.

Discussion of Findings

The findings of this study revealed that there is a significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate ICT facilities and those without adequate ICT facilities in Delta State. This implies that schools with adequate ICT facilities experience more effective teaching and learning outcomes in Social Studies compared to schools lacking such facilities. The finding agrees with Olowo and Kataye (2025), who observed that

Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

the availability of ICT facilities enhances classroom instruction, promotes learner participation, and improves teaching effectiveness in Social Studies. The finding is also consistent with Ighere (2025), who reported that the availability of physical and technological facilities positively influences learning outcomes in secondary schools in Delta State. Similarly, Mormah and Chioma (2025) emphasized that ICT resource-based teaching improves students' learning outcomes and promotes effective classroom interaction. However, the finding contrasts with Ethe and Avbenagha (2025), who argued that access to ICT facilities alone may not guarantee improved learning outcomes unless accompanied by pedagogical readiness and proper implementation strategies. Overall, the finding suggests that adequate ICT facilities play a vital role in improving the effective teaching and learning of Social Studies in secondary schools in Delta State.

The study also found that there is a significant difference in the effective teaching and learning of Social Studies between teachers and students with digital literacy skills and those without digital literacy skills in Delta State. This indicates that digital literacy skills positively influence teaching effectiveness, students' participation, and learning outcomes in Social Studies. The finding supports Agboghroma and Onyekpe (2025), who reported that digital literacy contributes significantly to students' problem-solving abilities, collaboration, and overall learning development in Social Studies education. The finding also aligns with Lawani (2025), who found that digital literacy and digital instructional strategies positively influence students' attitudes and achievement in Social Studies. In the same vein, Adolphus (2025) maintained that teachers with strong digital literacy skills are better equipped to inspire learners and improve classroom instruction in the digital era. Likewise, Macaulay and Akpan (2025) emphasized that digital literacy training and engagement with digital technologies positively influence students' academic performance and classroom participation. The finding therefore implies that digital literacy skills are essential for effective teaching and learning of Social Studies in Delta State secondary schools. Finally, the study revealed that there is a significant difference in the effective teaching and learning of Social Studies between secondary schools with adequate internet connectivity and technological infrastructure and those without adequate internet connectivity and technological infrastructure in Delta State. This indicates that schools with stable internet connectivity and adequate technological infrastructure achieve more effective teaching and learning outcomes in Social Studies. The finding is in agreement with Atubi (2022), who reported that internet connectivity and technological resources improve students' learning experiences and classroom interaction in Social Studies instruction. The finding also supports Anho (2024), who emphasized that adequate internet access and technological infrastructure are necessary for effective teaching and learning in secondary schools. Similarly, Nkolika (2025) noted that reliable internet connectivity and technological tools empower teachers to integrate technology effectively into curriculum delivery. The finding further aligns with Odoko and Ihedioha (2025), who stressed that investment in ICT infrastructure and stable internet connectivity significantly enhances teachers' job effectiveness and instructional delivery.

Conclusion

The study revealed that there are significant differences in the effective teaching and learning of Social Studies between secondary schools with adequate ICT facilities and those without adequate ICT facilities in Delta State. This indicates that the availability of ICT facilities contributes positively to improved classroom instruction, students' participation, and overall learning outcomes in Social Studies. The study also showed that there are significant differences in the effective teaching and learning of Social Studies between teachers and students with digital literacy skills and those without digital literacy skills in Delta State. This suggests that digital literacy skills are essential for effective instructional delivery, learner engagement, and improved academic performance in Social Studies. Furthermore, the study found that there are significant differences in the effective teaching and learning of Social Studies between secondary schools with adequate internet connectivity and technological infrastructure and those without adequate internet connectivity and technological infrastructure in Delta State. This implies that stable internet access and adequate technological infrastructure enhance effective curriculum delivery and classroom interaction. Overall, the study concludes that ICT facilities, digital literacy skills, and adequate internet connectivity and technological infrastructure are critical factors for improving the effective teaching and learning of Social Studies in secondary schools in Delta State.

Recommendations

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

1. Government and educational stakeholders should provide adequate ICT facilities in secondary schools to enhance effective teaching and learning of Social Studies in Delta State.

Evaluation of Digital Technology Device and ... Onyekpe, S. J. & Ehiede, C. (2026)

2. School authorities should organize regular digital literacy training programmes for teachers and students to improve their competence in the use of digital technologies for instructional and learning purposes.
3. Government and school management should invest in stable internet connectivity and improved technological infrastructure in secondary schools to support effective curriculum delivery and classroom

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