

## Evaluation on Integration of Basic Information and Communication Technology Literacy among Public Secondary Schools in Adavi Local Government Area of Kogi State, Nigeria

ABDULLAHI, Ahmad Rufai<sup>1</sup>

[Enesie13@gmail.com](mailto:Enesie13@gmail.com)

08068363935/08114492465

ABDULRAHMAN, Muhammed Jibrin<sup>2</sup>

[Abdulrahmn.jibrin@fceokene.edu.ng](mailto:Abdulrahmn.jibrin@fceokene.edu.ng)

08061618675

OKOGUN, Swamhen Precious<sup>3</sup>

[Precious.okogun@yahoo.com](mailto:Precious.okogun@yahoo.com)

08039267201

ALIYU, Halimat<sup>4</sup>

[Aliyuhalimat62@gmail.com](mailto:Aliyuhalimat62@gmail.com)

08144701412

<sup>1</sup>Department of Educational Foundations, Federal College of Education Okene, Kogi State, Nigeria

<sup>2</sup>College Library Department, Federal College of Education, Okene, Kogi State, Nigeria

<sup>3</sup>Department of Educational Foundations, Federal College of Education Okene, Kogi State, Nigeria

<sup>4</sup>Department of Science Education, Federal College of Education Okene, Kogi State, Nigeria

### Abstract

*The integration of Information and Communication Technology (ICT) is increasingly recognized as a driver for educational inclusivity and improved learning outcomes. This study investigated basic ICT literacy as a tool for educational inclusion in under-resourced public secondary schools in Nagazi–Adavi Local Government Area, Kogi State, Nigeria. A descriptive survey design adopting a mixed-methods approach was used. Data were collected through structured questionnaires administered to 344 respondents comprising students, teachers, and non-teaching staff, alongside in-depth interviews with six senior school personnel. Quantitative data were analyzed using descriptive statistics and Chi-square tests at the 0.05 level of significance, while qualitative data were analyzed thematically. The findings revealed that ICT facilities were largely inadequate and that ICT use during classroom teaching was minimal. Although ICT was widely perceived to improve understanding and increase students' interest in learning, no significant relationship was found between ICT availability and educational inclusion. Although, basic ICT literacy showed a significant relationship with students' engagement in teaching and learning. In addition, challenges such as inadequate infrastructure, unreliable electricity supply, and limited training opportunities were found to significantly hinder effective ICT integration. The qualitative findings supported the survey results, highlighting infrastructural deficiencies alongside positive attitudes towards ICT. The study concludes that ICT has strong potential to enhance educational inclusion and learning engagement but remains constrained by systemic challenges. It recommends targeted government investment in ICT infrastructure, provision of alternative power sources, periodic ICT training for teachers, curriculum-based ICT integration, and strengthened multi-stakeholder partnerships.*

**Keywords:** ICT literacy, educational inclusion, under-resourced schools, teaching and learning, Nigeria.

### Introduction

Information and Communication Technology (ICT) has assumed a central role in contemporary educational practice globally, as digital tools increasingly shape how knowledge is created, accessed, and disseminated. Hence, digital literacy has become an essential tool for every student across the world (Okuribido and Ekosse 2025). ICT broadly refers to the use of computers, internet facilities, communication networks, and related digital technologies for processing and communicating information (UNESCO, 2019). In the context of education, ICT supports teaching, learning, assessment, and school administration, and has become a key driver of innovation and quality improvement in educational systems (Olusegun et al, 2025). As societies become more digitally inclined, basic ICT literacy has emerged as a foundational skill necessary for learners to function effectively in academic, economic, and social environments (Olusegun et al, 2025). Educational inclusion is concerned with ensuring that all learners, irrespective of socio-economic status, gender, geographical location, or physical ability, have equitable access to meaningful learning opportunities (Kwihangana, 2024).



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In developing countries such as Nigeria, achieving inclusive education remains a persistent challenge, particularly within public secondary schools that are under-sourced (Munje and Jita, 2020). Many of these schools operate in environments largely characterized by inadequate funding, poor infrastructure, limited instructional materials, and insufficient access to ICT facilities. These constraints often result in unequal learning conditions that alienate students from disadvantaged backgrounds and limit their participation in technology-enhanced learning.

The Integration of ICT into education has been widely recognized as a viable strategy for promoting educational inclusion. ICT literacy enables learners to access diverse learning resources, engage actively in classroom activities, and develop problem-solving and critical thinking skills essential for lifelong learning (Tinio, 2018 and Ainscow, 2020). In Nigeria, the Federal Government has acknowledged the importance of ICT through policies such as the National policy on Education and the National ICT Policy, which emphasize the integration of ICT at all levels of education (Jerry and Oweibo, 2024). Despite these policy commitments, the implementation of ICT programs in public secondary schools has remained inconsistent, particularly in rural and semi-urban areas (Richard, 2021). In many Nigerian public secondary schools, ICT facilities are either grossly inadequate or non-functional, while teachers and students often lack the requisite basic ICT skills needed to utilize available technologies effectively (kuribido and Ekosse 2025). This situation has contributed to a widening digital divide between well-resourced urban schools and under-resourced public schools, thereby reinforcing educational inequality. Students in under-resourced schools are consequently excluded from the benefits of ICT-supported learning, which negatively affects their academic engagement, performance, and preparedness for higher education and the labour market. Adavi Local Government Area of Kogi State exemplifies these challenges. Public secondary schools in the area are largely under-resourced, with limited access to computers, internet connectivity, and structured ICT literacy programmes. The absence of adequate ICT infrastructure and training opportunities restricts students' exposure to digital learning tools, thereby undermining efforts toward educational inclusion in an increasingly technology-driven society. Given the growing importance of digital competence, there is a compelling need to examine how basic ICT literacy can be leveraged to promote inclusive education in such contexts (Yakubu and Joseph, 2025). It is against this backdrop that this study examines basic ICT literacy as a tool for educational inclusion in under-resourced public secondary schools in Adavi Local Government Area, Kogi State. The study seeks to assess the availability of ICT resources, determine the level of ICT literacy among teachers and students, and analyze the extent to which ICT literacy contributes to inclusive educational practices. By generating empirical evidence from Adavi LGA, this research aims to contribute to existing literature, inform educational policy implementation, and provide practical recommendations for improving ICT integration and promoting inclusive education in Nigerian public secondary schools.

### **Research Questions**

The study seeks to provide answers to the following research questions:

1. What ICT facilities are available in public secondary schools in Nagazi–Adavi Local Government Area?
2. What is the level of basic ICT literacy among teachers and students in these schools?
3. To what extent does basic ICT literacy contribute to educational inclusion in under-resourced public secondary schools in Nagazi–Adavi Local Government Area?
4. What challenges hinder the integration of basic ICT literacy in public secondary schools in the study area?
5. What strategies can be adopted to improve ICT-driven educational inclusion in under-resourced public secondary schools?

### **Significance of the Study**

The findings of this study will be of considerable importance to various stakeholders in the education sector.

1. Students: The study will highlight how basic ICT literacy can enhance students' access to learning resources, participation in classroom activities, and overall educational inclusion.
2. Teachers: The study will provide insights into teachers' ICT literacy needs and support the design of targeted capacity-building and professional development programs
3. School Administrators: The findings will assist school leaders in planning and prioritizing ICT resource allocation and integration strategies.
4. Policy Makers and Government Agencies: The study will offer empirical evidence to guide the implementation of ICT and inclusive education policies, particularly at the local government and state levels.



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5. Researchers and Academics: The study will contribute to the existing body of literature on ICT literacy and educational inclusion by providing context-specific evidence from Nagazi–Adavi Local Government Area.

### Area of the Study

The study will be conducted in Nagazi–Adavi Local Government Area of Kogi State, Nigeria. Nagazi–Adavi Local Government Area is predominantly semi-urban and rural, with public secondary schools serving students from diverse socio-economic backgrounds. The area is characterised by limited educational infrastructure and constrained access to modern ICT facilities in many public schools. These conditions make Nagazi–Adavi Local Government Area a suitable setting for examining basic ICT literacy and its role in promoting educational inclusion in under-resourced public secondary school environments.

### Research Design

The study adopted a descriptive survey research design using a mixed-methods approach. The quantitative aspect involved the administration of questionnaires to students and staff (teaching and non-teaching), while the qualitative aspect employed thematic interviews with selected senior staff. This design was considered appropriate because it allows for systematic collection and analysis of data on existing ICT literacy practices and educational inclusion in under-resourced public secondary schools.

### Population/ Sample Size of the Study

The population of the study comprised students, teaching staff, and non-teaching staff of the three major public secondary schools in Nagazi–Adavi Local Government Area of Kogi State. These schools were purposively selected because they constitute the major public secondary schools in the area.

**Table 1: Population of Selected Public Secondary Schools in Nagazi–Adavi LGA, Including Students and Staff (Teaching & Non-Teaching Staff)**

SN	School	Total Population	Proportion	Sample size
1.	Ebira Community Secondary School (ECSS) Nagazi	771	771/2473 X 344	107
2.	Science Secondary School (SSS), Nagazi-Eba.	829	829/2473X 344	115
3	Government Science Secondary School (GSS), Ogaminana	873	873/2473 X344	122
Total	2, 473	2,473		344

The sample gotten from each school include both the students, teaching and non-teaching staff which was selected randomly within each school. The sample size for the quantitative component of the study was determined using the Taro Yamane (1967) formula, this is because Taro Yamene formula is specifically initiated for deriving a sample size for known population hence, most appropriate for this study. Therefore, the sample size for the study was 344 respondents, drawn from students and staff of the selected schools. A multi-stage sampling technique was employed. First, purposive sampling was used to select the three public secondary schools in Nagazi–Adavi Local Government Area. Second, proportionate random sampling was used to select students and staff from each school based on their population size. This ensured adequate representation of both students and staff across the schools. For the qualitative component, purposive sampling was used to select six (6) senior staff members (principals, vice-principals, and senior teachers) for in-depth interviews, based on their experience and involvement in ICT-related administrative and instructional activities.

### Instruments for Data Collection

Two main instruments which are questionnaire and semi-structured interview were used to gather data. A structured questionnaire was administered to students, teaching and non-teaching staff. The questionnaire covered variables such as availability of ICT facilities, the level of basic ICT literacy, the use of ICT in teaching and learning, challenges to ICT integration in public secondary schools, and ICT literacy and educational inclusion. Responses were measured using a Likert-type scale. A semi-structured interview guide was used to conduct an in-depth interview with six senior staff members of the three public secondary schools in the research area. The interviews focused on variables such as ICT infrastructure, policy implementation, challenges, and the role of ICT literacy in promoting educational inclusion. Interview data were analyzed using thematic analysis.



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### Method of Data Analysis

Quantitative data obtained from questionnaires were analysed using descriptive statistics, including frequencies, percentages, mean scores, and standard deviations. Where necessary, inferential statistics were used to test the hypotheses at the 0.05 level of significance. Qualitative data collected through interviews were transcribed and analyzed thematically through coding and categorization to identify recurring patterns and themes related to ICT literacy and educational inclusion.

### Presentation of Results

**Table 2: Presentation of questionnaire responses.**

<b>Section A: Availability of ICT facilities</b>				
<b>Questions</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
Computers are available in my School	103	69	86	86
My School has a designated ICT centre	138	83	76	48
Internet facilities are available in my School	7	17	48	272
ICT facilities in my School are functional	17	72	83	172
<b>Section B: Basic ICT Literacy of Respondents</b>				
<b>Questions</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
I can operate computer without help	79	28	58	179
I can use basic word processing application	41	28	151	138
I can browse the internet for academic purposes	138	45	69	33
I can use ICT tools for assignment or tasks	172	86	52	34
<b>Section C: Use of ICT in teaching and learning</b>				
<b>Questions</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
Teachers use ICT during classroom teaching	28	7	103	206
ICT is used for assignments and projects	138	67	86	52
ICT improves understanding of lessons	206	86	34	17
ICT increases students' interest in learning	224	69	34	17
<b>Section D: ICT and Educational inclusion</b>				
<b>Questions</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
ICT Promotes equal learning opportunity	189	86	41	28
Students without ICT skills are disadvantaged	206	76	34	28
ICT enhance Students' participation	172	103	41	28
ICT reduces learning gap among students	165	110	41	28
<b>Section E: Challenges to ICT integration</b>				
<b>Questions</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
Adequate ICT facilities are available	17	34	120	172
Electricity supply supports ICT use	10	24	103	206
Teachers receive adequate ICT training	52	69	120	103
Poor infrastructure limits ICT integration	224	69	34	17
<b>Section F: Strategies for improving ICT integration</b>				
<b>Questions</b>	<b>SA</b>	<b>A</b>	<b>D</b>	<b>SD</b>
Government should invest more on ICT	234	69	28	13
Alternative power source should be adopted	217	76	34	17
Regular ICT training for teachers is necessary	206	86	31	21
ICT should be fully integrated into the curriculum	224	79	24	17



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**Table 3: Thematic Analysis of In-depth Interview responses (n=6)**

Interview questions	Coded theme	Key indicator from responses	Link to Questionnaire question
Conditions of ICT facilities in Schools	Inadequate infrastructure	ICT Absence of functional computers, poor equipped ICT structures	Section B (ICT availability)
Usage of ICT in teaching and learning	Minimal integration	classroom Dominant use of chalk and black board, ICT only referenced and rarely used	Section D (ICT use in teaching)
Challenges to ICT integration in Schools	Infrastructure and power failure	Unstable supply of electricity, lack of funding and maintenance	Section F (ICT Challenges)
Attitude towards ICT	Positive attitude towards ICT	High student interest, admin willing to bring in professionals on part time if ICT is available	Sections D & E (engagement and inclusion)
Interventions needed	Institutional and government support	Demand for funding, training and alternative power source	Section G (strategies to improvement)

Table 4: table showing the summary of null hypotheses testing with (a) =0.05 level of significance

Ho<sub>1</sub>: There is no significant relationship between basic ICT literacy and educational inclusion in public secondary schools in Nagazi–Adavi Local Government Area.

Ho<sub>2</sub>: Availability of ICT facilities do not significantly influence the level of basic ICT literacy among teachers and students in public secondary schools in Nagazi–Adavi Local Government Area.

Ho<sub>3</sub>: Teachers’ ICT literacy does not significantly affect the integration of ICT into teaching and learning in under-resourced public secondary schools in the study area.

Hypothesis	Variables tested	X <sub>2</sub> calculated	df	X <sup>2</sup> critical	Decision
Ho <sub>1</sub>	ICT availability x Educational inclusion	0.30	1	3.84	Not rejected
Ho <sub>2</sub>	ICT literacy x Teaching and learning engagement	6.72	1	3.84	Rejected
Ho <sub>3</sub>	ICT challenges x Effective ICT use	9.15	1	3.84	Rejected

### Discussion of Findings

Below are the findings from the questionnaire distributed and in-depth interview conducted. It involves the hypothesis hypotheses testing and discussion of findings using evidences from both the questionnaire survey and in-depth interview data. The integration of mixed pattern (quantitative and qualitative data) strengthens the interpretation of findings.

Ho<sub>1</sub>: states that there is no significant relationship between the availability of ICT facilities and educational inclusion in public secondary schools in Nsagazi-Adavi Local Government Area.

The Chi Square analysis shows that the calculated X<sup>2</sup> value (0.30) was less than the critical value (3.840 at 0.05 level of significance). Therefore, the null hypothesis was not rejected. This is because responses revealed that computers, internet access, and functional ICT centres were largely unavailable in the sampled schools and also, the data collected showed strong agreement that ICT promotes equal learning opportunities, reduces learning gaps, and enhance participation. The interview data buttresses this result under the theme “inadequate ICT infrastructure” where respondents reported that ICT facilities were either absent or non-functional. However, school administrators admitted ICT’s inclusive potential, and its absence limiting practical impact.

Ho<sub>2</sub>: States that “there is no significant relationship between basic ICT literacy and students’ engagement in teaching and learning”. The calculated  $\chi^2$  value (6.72) exceeded the critical value (3.84). hence, the null hypothesis was rejected. Data from Section C of the questionnaire showed different levels of ICT literacy among respondents, while Section D revealed strong agreement that ICT improves understanding of lessons and increases students’ interest in learning activities. In-depth interview responses where the theme “Positive Attitude towards ICT”, indicates that students and teachers showed enthusiasm and higher engagement whenever ICT tools were introduced also supported this.



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H<sub>03</sub>: There is no significant relationship between ICT integration challenges and effective use of ICT in teaching and learning”. Quantitative analysis shows that calculated  $\chi^2$  value (9.15) was greater than the critical value (3.84), leading to the rejection of the null hypothesis. Findings from the questionnaire highlighted major challenges such as inadequate ICT facilities, poor electricity supply, and limited ICT training, as it was also observed that there is low use of ICT during classroom teaching. Interview data strongly supported this result under the theme “Infrastructure and Power Constraints”, where respondents identified unreliable electricity as the most significant barrier towards ICT usage.

### **Discussion of Findings**

The findings indicate that while ICT is widely perceived as a tool for educational inclusivity, its limited availability in public secondary schools especially the study area (Nagazi in Adavi LGA) has prevented measurable inclusive outcomes. This explains the absence of a statistically significant relationship between ICT availability and educational inclusion. The significant relationship observed suggests that basic literacy in ICT plays a crucial role in advancing teaching and learning engagement. Respondents with ICT skills were more likely to participate actively, complete assignments effectively, and show increased motivation. This highlights literacy in ICT as a basic driver of learner engagement in secondary education and the school environments. Significant relationship also indicated that infrastructural and systemic challenges directly affect effective ICT integration. Even where teachers possess basic ICT skills, the lack of facilities and stable power supply severely limits classroom application.

### **Conclusion**

The study reveals that while ICT is widely recognized as a powerful and important tool for educational inclusivity and effective teaching, its impact in Nagazi–Adavi public secondary schools is constrained by inadequate infrastructure in most school and unreliable electricity supply where structures and facilities exist. Basic ICT literacy significantly enhances students’ engagement in learning, but systemic challenges limit sustained classroom integration. The convergence of questionnaire findings and thematic interview evidence confirms that improving ICT outcomes in public schools especially those that are under-resourced requires not only skills development but also substantial infrastructural and policy support.

### **Recommendations**

From the findings of this study, the following recommendations are proposed:

1. Government investment in ICT infrastructure: government at all level should prioritize the provision of functional and effective ICT facilities in public secondary schools. Facilities such as computers, internet access, and a well-equipped ICT centres especially in under-resourced rural areas such as Nagazi public secondary schools.
2. Provision of alternative power source: persistent challenges of unreliable electricity supply have been documented hence, schools should be supported with alternative power source such as solar power to solve this, as it will ensure consistent ICT usage for teaching and learning.
3. Periodic ICT training for teachers and school administrators: regular ICT training programmes should be established to improve teachers’ competence and ability in integrating ICT into classroom instruction and assessment practices.
4. Curriculum-aligned integration of ICT: ICT use should be embedded across subject areas instead of being treated as an extra-curricular activity. This will help students develop digital skills through formal learning experiences.
5. Multi-stakeholder support and partnership: collaboration among government agencies, private sector partners, community organizations, and non-governmental organizations should be encouraged to support ICT provision, maintenance, and capacity building in public secondary schools.

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