CURRICULUM INTEGRATION AND SKILL ENHANCEMENT: EXPLORING RESOURCES AND STRATEGIES FOR DIGITAL LITERACY IN LAGOS STATE TECHNICAL COLLEGES

Elvis Ezeugo Uzomah
Department of Electrical/ Electronics technology
University of Lagos

Abstract

The study investigated Curriculum Integration and Skill Enhancement: Exploring Resources and Strategies for Digital Literacy in Lagos State Technical Colleges. A descriptive survey design was adopted, with a population of 367 respondents comprising 250 students and 75 teachers from Lagos State government technical colleges, 30 self-employed graduates, 10 employers of labour, and 2 lecturers from the University of Lagos. Stratified random sampling was employed for selection. Data were collected using a self-structured questionnaire and analyzed with mean and standard deviation for research questions. Findings revealed that the integration of digital literacy into the curriculum requires adequate resources such as computer laboratories, reliable electricity with alternative power sources, internet connectivity, multimedia instructional tools, and peripheral devices to foster students' technological proficiency. The study further identified strategies such as mentorship, the use of career-oriented and project-based learning, digital assessments, incentives, and interactive teaching approaches as effective in enhancing students' acquisition of digital literacy skills. The study concluded that resource provision alone is insufficient to achieve effective digital literacy integration; innovative pedagogical strategies and structured student engagement must complement infrastructural investment to equip technical college students with relevant 21st-century workforce skills. It was recommended that government and stakeholders prioritize the provision of well-equipped computer laboratories with stable electricity and internet facilities in all technical colleges to strengthen digital literacy training.

Key words: Digital literacy, Curriculum Integration, Technical Colleges, Resource Provision, and Pedagogical Strategies.

Introduction

The digital era has fundamentally transformed education and employment, making digital literacy a prerequisite for participation in the global economy. Digital literacy encompasses the ability to access, evaluate, create, and communicate information using digital technologies in a safe, ethical, and responsible manner (UNESCO, 2018). For technical and vocational education and training (TVET) institutions, especially in rapidly developing contexts such as Lagos State, Nigeria, integrating digital literacy into curriculum and pedagogy has become essential for equipping students with the competencies needed to thrive in the 21st-century workforce. Technical colleges are mandated to produce skilled graduates ready for industry demands; however, without deliberate integration of digital literacy into teaching and learning processes, students may struggle to adapt to technology-driven labor markets (UNICEF, 2020; Yorke, 2006).

In Nigeria, the *National Digital Economy Policy and Strategy (2020–2030)* underscores the critical role of digital skills development in fostering national productivity, entrepreneurship, and employability (Federal Ministry of Communications & Digital Economy,

2020). Lagos State, being Nigeria's commercial hub and home to a diverse economy, is uniquely positioned to lead in digital innovation. The Lagos State Technical and Vocational Education Board (LASTVEB) has emphasized reforms in technical education aimed at aligning curricula with industry needs. Yet, challenges remain regarding the effective integration of digital literacy into technical college programs, particularly in terms of available resources and teaching strategies (Oviawe, Uwameiye, & Uddin, 2017).

A major concern in curriculum integration is the availability of resources. Many technical colleges face infrastructural challenges, such as outdated computers, poor internet connectivity, and limited access to relevant software and virtual laboratories (Fajemirokun, 2019). These deficits limit students' opportunities to acquire practical, hands-on experience with digital tools, which is critical for employability. Furthermore, inadequate funding and uneven resource distribution between urban and peri-urban colleges exacerbate disparities in digital learning opportunities. Teacher capacity also emerges as a resource-related challenge, as many educators require training and support to effectively incorporate digital tools into pedagogy (Jebba & Nordin, 2024). Without addressing these resource needs, curriculum integration efforts may remain largely theoretical.

Equally important are the strategies for enhancing the acquisition of digital literacy skills among students. Effective strategies go beyond providing infrastructure to include innovative pedagogical approaches such as project-based learning, blended learning, and simulation-based instruction. These methods foster problem-solving, creativity, collaboration, and critical thinking—skills that are indispensable in the modern workforce (Bawden, 2008; Hwang & Tseng, 2021). Research has shown that when digital literacy is taught through real-world applications and embedded across multiple subjects, students develop a more holistic understanding of how technology supports industry practices (Raish & Rimland, 2016). Additionally, strong partnerships between schools and industry can provide students with experiential learning opportunities, internships, and access to emerging technologies that deepen digital competencies (Quraishi, Ulusi, Moihd, Hakimi, & Olusi, 2023).

Despite these promising approaches, barriers such as socio-economic inequalities continue to affect digital literacy acquisition. Many students from low-income households cannot afford personal devices or reliable internet access, thereby widening the digital divide (Tiamiyu & Ajayi, 2020). This limitation restricts their ability to practice digital skills outside the classroom, reducing the impact of school-based interventions. Addressing such challenges requires systemic policies that promote equitable access, as well as targeted interventions to support marginalized groups.

Against this background, the present study titled ―*Curriculum Integration and Skill Enhancement: Exploring Resources and Strategies for Digital Literacy in Lagos State Technical Colleges*‖ investigates two central dimensions: (i) the resources required for integrating digital literacy into the curriculum and pedagogy of Lagos State technical colleges, and (ii) the strategies that can effectively enhance the acquisition of digital literacy skills among students. By focusing on these variables, the study contributes to ongoing policy and educational discourse on how to align technical education with labor market demands in Nigeria. It also aims to provide evidence-based recommendations to policymakers, educators, and industry stakeholders on strengthening the capacity of technical colleges to prepare a digitally literate workforce.

Problem of the Study

The rapid advancement of digital technologies has transformed nearly every

sector of the global economy, underscoring the urgent need for digital literacy as a core competency in education and employment. In Nigeria, and particularly in Lagos State, technical colleges are expected to produce a workforce equipped with relevant skills to meet the demands of the 21st-century labor market. However, despite the recognition of digital literacy as a prerequisite for employability and sustainable career engagement, significant gaps persist in its effective integration into the curriculum and pedagogy of technical colleges (Oviawe, Uwameiye, & Uddin, 2017).

One of the major issues lies in the inadequacy of resources necessary for embedding digital literacy into teaching and learning. Many technical colleges in Lagos State continue to operate with outdated infrastructure, insufficient access to modern digital devices, limited internet connectivity, and a lack of specialized software and virtual laboratories (Fajemirokun, 2019). Additionally, teachers often lack sufficient professional development opportunities to build their own digital competencies, making it difficult for them to incorporate technology-based instructional practices into classroom delivery (Jebba & Nordin, 2024). These resource constraints hinder the capacity of technical colleges to prepare students with the practical digital skills needed for employment in technology-driven industries.

Beyond resource deficits, there is also a pressing challenge in terms of strategies for enhancing the acquisition of digital literacy skills among students. Current teaching methods in many technical colleges remain largely traditional and teacher-centered, with limited adoption of innovative pedagogies such as blended learning, project-based instruction, and simulation-based training that foster digital competence (Raish & Rimland, 2016). Furthermore, weak linkages between technical colleges and industry partners restrict students' exposure to real-world applications of digital tools, thereby reducing the relevance of their training to labor market requirements (Quraishi, Ulusi, Moihd, Hakimi, & Olusi, 2023).

Compounding these challenges are socio-economic inequalities that create a digital divide among students. Those from low-income households often lack personal devices or stable internet connectivity outside the classroom, limiting opportunities for independent practice and reinforcement of digital skills (Tiamiyu & Ajayi, 2020). As a result, even when digital literacy is partially integrated into the curriculum, the benefits are unevenly distributed, leaving many students underprepared for the demands of the modern workforce.

These persistent gaps raise critical questions about the readiness of Lagos State technical colleges to equip students with the digital skills needed for employability, career engagement, and participation in Nigeria's digital economy. If the resource and pedagogical challenges are not adequately addressed, the objective of producing a digitally competent workforce will remain unattainable.

It is against this backdrop that the present study seeks to explore the resources required for integrating digital literacy into the curriculum and pedagogy of Lagos State technical colleges, and to examine the strategies that can effectively enhance students' acquisition of digital literacy skills. By investigating these issues, the study aims to provide insights that will inform policy, curriculum design, and pedagogical practices toward strengthening digital literacy in technical education.

Purpose of the Study

The major purpose of the study is to examine Curriculum Integration and Skill Enhancement: Exploring Resources and Strategies for Digital Literacy in Lagos State Technical Colleges. Specifically, the research seeks to enquire:

1. Resources needed for integrating digital literacy into the curriculum and pedagogy of Lagos state technical colleges.

2. The strategies to enhance the acquisition of digital literacy skills among Lagos state technical college students.

Research Questions

The following research questions were raised to guide the study

1. What are the resources and facilities needed for integrating digital literacy skills into the curriculum and pedagogy of Lagos state technical college students?
2. What are the strategies to enhance Lagos state technical college students digital literacy skills?

Research Methodology

The research design employed for this study was the descriptive survey research design. A descriptive survey is essentially an assessment of the present state of affairs, usually carried out through questionnaires, opinions, and interviews. Neuman (2014) viewed descriptive survey research as a methodological approach used in social science to systematically gather, analyze, and interpret data about the characteristics, behaviors, attitudes, or opinions of a population or sample. Similarly, Creswell and Creswell (2017) opined that descriptive survey design provides a detailed snapshot of the current state of a phenomenon without deforming the concept of the variables under consideration. In other words, the descriptive survey approach is intended to describe the present condition of a phenomenon without manipulating the variables or establishing causal relationships. This design was considered most suitable for the study, as it elicited information from students of government technical colleges, teachers of these colleges, professionals and lecturers in related disciplines, career personnel in technical trades, and employers of labour in technical trades.

The study was conducted in three categories of areas in Lagos State, reflecting the heterogeneous nature of the study population. The first category covered the five government technical colleges in the state, namely Government Technical College Ado-Soba, Government Technical College Agidingbi in Ikeja, Government Technical College Epe, Government Technical College Ikotun, and Government Technical College Ikorodu. The second category included Arena Cantonment Market, Oshodi, and Computer Village, Ikeja, while the third category was the University of Lagos. The choice of these areas was informed by the study population and the relevance of the information they provided regarding the spread and general abilities of Lagos State as Nigeria's foremost economic hub, which generates diverse employment opportunities for graduates of its institutions and those from other states across the federation.

The population for this study was heterogeneous and comprised three categories. The first category included students and teachers of the five government technical colleges in Lagos State. The second category comprised self-employed career personnel in technical trades, employees in technical trades, and employers of labour in technical trades located in Arena Cantonment Market and Computer Village, Ikeja. The third category included professionals and lecturers in related fields from the University of Lagos, specifically lecturers in the Department of Vocational and Technology Education.

Considering the heterogeneity of the population, along with constraints of time and cost, a stratified random sampling technique was adopted for selecting samples from the first category, while a purposive sampling technique was used for the second and third categories. The stratified sampling ensured that all members of the first population had an equal chance of selection, while the purposive technique enabled the researcher to generalize the findings to about 70% of the universal population. Accordingly, the sample distribution was as follows: from stratum one, fifty students and fifteen teachers were selected from each of

the five government technical colleges, totaling 325 respondents. Stratum two comprised thirty self-employed individuals in technical trades and ten employers of labour in technical trades drawn from Arena Cantonment Market and Computer Village, yielding forty respondents. Stratum three consisted of two lecturers and professionals from the University of Lagos, resulting in two respondents. Altogether, the total sample size comprised 367 expected respondents. In each case, respondents were selected as described above, and thereafter the data collection instrument was administered.

The instrument for data collection in this study was a structured questionnaire. A data collection instrument, as noted by Creswell et al. (2017), is a tool designed to gather information in a systematic and standardized manner, ensuring the collection of reliable and valid data for analysis. Structured questionnaires were developed by the researcher under the title ―Digital Literacy in Technical Colleges Questionnaire (DLTCQ),‖ which was divided into seven sections labeled A–G. Section A focused on personal data such as status and gender. Section B included ten items assessing digital literacy skills needed by technical college students for employment. Section C comprised ten items addressing teaching techniques to develop digital literacy skills. Section D contained ten items examining how digital literacy influences career engagement and employability. Section E, with ten items, investigated challenges affecting the acquisition of digital literacy skills, while Section F addressed resources needed for integrating digital literacy into technical college curricula. Section G contained ten items focusing on strategies to motivate students to improve their digital literacy skills. Responses were measured using a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1).

The instrument was subjected to validation and reliability testing. Validity, as defined by Bryman (2016) and Trochim (2006), refers to the degree to which an instrument accurately measures the intended construct or phenomenon. To ensure validity, five experts from the fields of technology education and measurement and evaluation at the University of Lagos reviewed the instrument. Their observations and recommendations were incorporated into the final version of the questionnaire. Reliability, on the other hand, refers to the consistency and dependability of the instrument. Following Chen and Popovich (2018), reliability was tested through a pilot study involving thirty students and five teachers at the Federal Science and Technical College, Yaba. Using Cronbach's Alpha, the reliability coefficient of the instrument was estimated at 0.89, indicating a high level of internal consistency.

The data collection process was meticulously planned to ensure comprehensive coverage of the three categories of participants. Trained research assistants, briefed on the study objectives and ethical considerations, assisted in administering the questionnaires. All participants were provided with detailed information about the study and assured of confidentiality, while participation remained voluntary. Data from students and teachers were collected during school hours, with 50 students and 15 teachers sampled from each technical college. For self-employed individuals and employers of labour at Arena Market and Computer Village, purposive sampling was applied, and questionnaires were administered with necessary clarifications and translations provided. Two lecturers from the University of Lagos were also surveyed in their offices using the same questionnaire. In each case, the researcher waited while the respondents completed the instrument and retrieved it immediately thereafter.

Before analysis, the data were cleaned and pre-processed to address missing values, outliers, and inconsistencies in line with Creswell et al. (2017). Descriptive statistics, including percentages, mean, and standard deviation, were used to

analyze the data. Percentages were employed to describe demographic variables, while means and standard deviations were used to address research questions. The true limit of real numbers was adopted as a decision rule: a mean score of 3.50 and above indicated agreement, less than 2.50 indicated disagreement, while scores between 2.50 and 3.49 indicated neutrality. To test the null hypotheses, Chi- square was employed at a 0.05 level of significance. The decision rule was to reject the null hypothesis if the calculated value exceeded the tabulated value; otherwise, the null hypothesis was retained.

Results

Research Question 1

What are the resources and facilities needed for integrating digital literacy skill into the curriculum and pedagogy of Technical colleges in Lagos state?

Table 1: Resources and Facilities Needed for Integrating Digital Literacy Skills into the Curriculum and Pedagogy of Technical College as Perceived by the Students

S/N	Statements	Mean	SD
1.	Hardware tools and software are needed in the study of digital literacy	4.42	.73
2.	Monitors and central processing unit are needed in learning digital skills.	3.96	.58
3.	Computer laboratory should be incorporated into the school structure	4.52	.52
4.	Projectors are needed in the training of the digital literacy skill.	4.43	.67
5.	Internet facilities are needed in the school to enhance digital skills.	4.21	.66
6.	The college should update its digital literacy materials regularly.	4.47	.75
7.	Computers play a role in digital literacy training.	4.32	.61
8.	Mouse and keyboards are needed to control digital literacy devices.	4.17	.68
9.	Electricity and sources of energy are needed to power digital literacy equipment.	4.19	.59
10.	Audio visuals are used as instructional materials in the digital literacy skill studies.	4.40	.66

Key: 00–1.49 = Strongly Disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Undecided, 3.50–4.49 = Agree, 4.50–5.00 = Strongly Agree

Decision: 0.00 –3.49 (Disagreed), 3.50 – 5.00 (Agreed)

Table 1 above is students' responses on resources and facilities needed for integrating digital literacy skills into the curriculum and pedagogy of technical college. The result revealed that the students agreed that: Hardware tools and software are needed in study of digital literacy ($\bar{X}$ = 4.42), monitors and central processing unit are needed in learning digital skills. ($\bar{X}$ = 3.96), Computer laboratory should be incorporated into the school structure ($\bar{X}$ = 4.52), projectors are needed in the training of the digital literacy skill. ($\bar{X}$ = 4.43), internet facilities are needed in the school to enhance digital skills. ($\bar{X}$ = 4.21), the college should update its digital literacy materials regularly ($\bar{X}$ = 4.47), computers play a role in digital literacy training. ($\bar{X}$ = 4.32), mouse and keyboards are needed to control digital literacy devices. ($\bar{X}$ = 3.17), electricity and sources of energy are needed to power digital literacy equipment. ($\bar{X}$ = 4.19) and audio visuals are used as instructional materials in the digital literacy skill studies. ($\bar{X}$ = 4.40). The items on the scale had mean scores ranging from 3.96 to 4.47. All the resources and facilities needed for integrating digital literacy skill into the curriculum and pedagogy of technical colleges received a mean score of 3.96 and above and were therefore regarded as the resources and facilities needed for integrating digital literacy skill into the

curriculum and pedagogy of technical colleges.

Table 2: Resources and Facilities Needed for Integrating Digital Literacy Skills into the Curriculum and Pedagogy of Technical College as Perceived by the Teachers

S/N	Statements	Mean	SD
1.	Audio visuals are used as instructional materials in the digital literacy skill studies.	4.39	.71
2.	The college should update its digital literacy materials regularly.	4.11	.67
3.	Computers play a role in digital literacy training.	4.32	.82
4.	Power supply is paramount in the digital literacy training.	4.22	.52
5.	Laptops and desktop are essential in digital literacy training.	4.13	.62
6.	Router is needed for internet connectivity to enhance digital literacy skill training	4.21	.66
7.	Projectors are needed in the training of the digital literacy skill.	4.26	.66
8.	Hardware tools and software are needed in study of digital literacy	4.20	.59
9.	Digital literacy laboratory should be incorporated into the school building	4.24	.59
10.	Monitors and central processing unit are needed in learning digital skills.	4.23	.69

Key: 00–1.49 = Strongly Disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Undecided, 3.50–4.49 = Agree, 4.50–5.00 = Strongly Agree

Decision: 0.00 –3.49 (Disagreed), 3.50 – 5.00 (Agreed)

Table 2 above is teachers' responses on resources and facilities needed for integrating digital literacy skills into the curriculum and pedagogy of technical college. The result revealed that the teachers agreed that: audio visuals are used as instructional materials in the digital literacy skill studies. ($\bar{X}$ = 4.39), the college should update its digital literacy materials regularly. ($\bar{X}$ = 4.11), computers play a role in digital literacy training. ($\bar{X}$ = 4.32), power supply is paramount in the digital literacy training. ($\bar{X}$ = 4.22), laptops and desktop are essential in digital literacy training. ($\bar{X}$ = 4.13) and router is needed for internet connectivity to enhance digital literacy skill training ($\bar{X}$ = 4.21), projectors are needed in the training of the digital literacy skill. ($\bar{X}$ = 4.26), hardware tools and software are needed in study of digital literacy ($\bar{X}$ = 4.20), digital literacy laboratory should be incorporated into the school building ($\bar{X}$ = 4.24), and that monitors and central processing unit are needed in learning digital skills. ($\bar{X}$ = 4.23). The items on the scale had mean scores ranging from 4.11 to 4.39. All the resources and facilities needed for integrating digital literacy skill into the curriculum and pedagogy of technical colleges received a mean score of 4.11 and above and were therefore regarded as the resources and facilities needed for integrating digital literacy skill into the curriculum and pedagogy of technical colleges.

Table 3: Resources and Facilities Needed for Integrating Digital Literacy Skills into the Curriculum and Pedagogy of Technical College as Perceived by the Lecturers

S/N	Statements	Mean	SD
1.	Connectivity and internet facilities are important in the acquisition of digital literacy skills.	4.55	.70
2.	Access to online resources can enhance digital literacy education.	4.51	.67
3.	Software applications and program packages are classic in digital skill training.	4.45	.62
4.	Provision of e-learning data base is ideal for digital literacy skill acquisition.	4.48	.52
5.	Digital literacy modules and resources are needed in technical school curriculum.	4.33	.62
6.	Computer tables and chairs are needed in the lab for easy of digital skill acquisition.	4.31	.66
7.	Digital storage devices like flash and memory cards are crucial in digital literacy training.	4.28	.61
8.	Laptops and desktop are basic needed in digital literacy skill acquisition.	4.62	.59
9.	The use of audio visual devices is necessary in digital literacy skill acquisition instructions.	4.54	.59
10.	Printers and scanners aid in the study of digital literacy skill.	4.53	.69

Key: 00–1.49 = Strongly Disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Undecided, 3.50–4.49 = Agree, 4.50–5.00 = Strongly Agree

Decision: 0.00 –3.49 (Disagreed), 3.50 – 5.00 (Agreed)

Table 3 above is lecturers 'responses on resources and facilities needed for integrating digital literacy skills into the curriculum and pedagogy of technical college. The result revealed that the lecturers agreed that: Connectivity and internet facilities are important in the acquisition of digital literacy skills ($\bar{X}$ = 4.55), access to online resources can enhance digital literacy education ($\bar{X}$ = 4.51), software applications and program packages are classic in digital skill training ($\bar{X}$ = 4.45), provision of e-learning data base is ideal for digital literacy skill acquisition ($\bar{X}$ = 4.48), digital literacy modules and resources are needed in technical school curriculum ($\bar{X}$ = 4.33), computer tables and chairs are needed in the lab for easy of digital skill acquisition ($\bar{X}$ = 4.31), digital storage devices like flash and memory cards are crucial in digital literacy training ($\bar{X}$ = 4.28), laptops and desktop are basic needed in digital literacy skill acquisition ($\bar{X}$ = 4.62), the use of audio visual devices is necessary in digital literacy skill acquisition instructions ($\bar{X}$ = 4.54) and printers and scanners aid in the study of digital literacy skill ($\bar{X}$ = 4.53). The items on the scale had mean scores ranging from 4.28 to 4.62. All the resources and facilities needed for integrating digital literacy skill into the curriculum and pedagogy of technical colleges received a mean score of 4.28 and above and were therefore regarded as the resources and facilities needed for integrating digital literacy skill into the curriculum and pedagogy of technical colleges.

Research Question 2

What are the strategies to enhance technical college students' digital literacy skills?

Table 4: Strategies to Motivate Students to Improve Digital Literacy Skills as Perceived by the Students

S/N	Statements	Mean	SD
1.	Rewards or incentives would motivate students to improve digital literacy skills.	4.21	.66
2.	Teachers should make digital literacy more engaging for students.	4.11	.54
3.	Peer learning groups would help students improve in digital skills.	4.02	.59
4.	Career-oriented digital literacy projects should be increased in the college.	4.37	.60
5.	Digital literacy mentors should be available to students.	4.09	.58
6.	The college should create a more supportive environment for digital learning.	4.04	.69
7.	Competitions or challenges in digital literacy should be created.	4.29	.61
8.	The college should better communicate the importance of digital literacy.	4.22	.52
9.	More strategies are needed to increase student participation in digital literacy programs.	4.53	.82
10.	Academic test should be administered using digital literacy tools.	4.12	.57

Key: 00–1.49 = Strongly Disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Undecided, 3.50–4.49 = Agree, 4.50–5.00 = Strongly Agree

Decision: 0.00 –3.49 (Disagreed), 3.50 – 5.00 (Agreed)

Table 4 above is students' responses on strategies to motivate students to improve digital literacy skills. The result revealed that the students agreed that: Rewards or incentives would motivate students to improve digital literacy skills ($\bar{X}$ = 4.21), teachers should make digital literacy more engaging for students ($\bar{X}$ = 4.11), peer learning groups would help students improve in digital skills ($\bar{X}$ = 4.02), career-oriented digital literacy projects should be increased in the college ($\bar{X}$ = 4.37), digital literacy mentors should be available to students ($\bar{X}$ = 4.09), the college should create a more supportive environment for digital learning ($\bar{X}$ = 4.04), competitions or challenges in digital literacy should be created ($\bar{X}$ = 4.29), the college should better communicate the importance of digital literacy ($\bar{X}$ =4.22), more strategies are needed to increase student participation in digital literacy programs ($\bar{X}$ = 4.53) and that academic test should be administered using digital literacy tools ($\bar{X}$ = 4.12). The items on the scale had mean scores ranging from 4.02 to 4.53. All the strategies to enhance technical college students' digital literacy skills received a mean score of 4.02 and above and were therefore regarded as the strategies to enhance technical college students' digital literacy skills.

Table 5: Strategies to Motivate Students to Improve Digital Literacy Skills as Perceived by the Teachers

S/N	Statements	Mean	SD
1.	Digital literacy mentors should be available to students.	4.14	.67
2.	The college should create a more supportive environment for digital learning.	4.51	.66
3.	Competitions or challenges in digital literacy such as online task and quiz should be encouraged	4.19	.61
4.	The college should better communicate the importance of digital literacy.	4.22	.52
5.	More strategies are needed to increase student participation in digital literacy programs.	4.13	.62
6.	Academic test should be administered using digital literacy tools.	4.21	.66
7.	Rewards or incentives for students would motivate students to improve digital literacy skills.	4.56	.73
8.	Teachers should make digital literacy more engaging for students.	4.32	.59
9.	Peer learning groups would help students improve in digital skills.	4.23	.69
10.	Career-oriented digital literacy projects should be increased in the college.	4.39	.71

Key: 00–1.49 = Strongly Disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Undecided, 3.50–4.49 = Agree, 4.50–5.00 = Strongly Agree

Decision: 0.00 –3.49 (Disagreed), 3.50 – 5.00 (Agreed)

Table 5 above is teachers' responses on strategies to enhance technical college students' digital literacy skills. The result revealed that the teachers agreed that: Digital literacy mentors should be available to students ($\bar{X}$ = 4.14), the college should create a more supportive environment for digital learning ($\bar{X}$ = 4.51), competitions or challenges in digital literacy should be created ($\bar{X}$ = 4.19), the college should better communicate the importance of digital literacy ($\bar{X}$ =4.22), more strategies are needed to increase student participation in digital literacy programs ($\bar{X}$ = 4.13) and that academic test should be administered using digital literacy tools ($\bar{X}$ = 4.21), rewards or incentives would motivate students to improve digital literacy skills ($\bar{X}$ = 4.56), teachers should make digital literacy more engaging for students ($\bar{X}$ = 4.32), peer learning groups would help students improve in digital skills ($\bar{X}$ = 4.23), and that career-oriented digital literacy projects should be increased in the college ($\bar{X}$ = 4.39). The items on the scale had mean scores ranging from 4.13 to 4.56. All the strategies to enhance technical college students' digital literacy skills received a mean score of 4.13 and above and were therefore regarded as the strategies to enhance technical college students' digital literacy skills.

Table 6: Strategies to Motivate Students to Improve Digital Literacy Skills as Perceived by the Lecturers

S/N	Statements	Mean	SD
1.	Offering digital literacy certifications can motivate students	4.59	.81
2.	Incorporating interactive and practical digital literacy lessons increases student engagement	4.51	.67
3.	Providing real-world applications of digital literacy in the curriculum motivates students	4.52	.82
4.	Recognizing and rewarding improvements in digital literacy skills encourages students	4.48	.52
5.	Creating a supportive and resource-rich learning environment enhances student motivation	4.33	.62
6.	Rewards or incentives would motivate students to improve digital literacy skills.	4.31	.66
7.	Teachers should make digital literacy more engaging for students.	4.56	.69
8.	Peer learning groups would help students improve in digital skills.	4.62	.70
9.	The college should better communicate the importance of digital literacy.	4.54	.59
10.	Career-oriented digital literacy projects should be increased in the college.	4.53	.69

Key: 00–1.49 = Strongly Disagree, 1.50–2.49 = Disagree, 2.50–3.49 = Undecided, 3.50–4.49 = Agree, 4.50–5.00 = Strongly Agree

Decision: 0.00 –3.49 (Disagreed), 3.50 – 5.00 (Agreed)

Table 6 above is lecturers' responses on strategies to motivate students to improve digital literacy skills. The result revealed that the lecturers agreed that: Offering digital literacy certifications can motivate students (X = 4.59), incorporating interactive and practical digital literacy lessons increases student engagement (X = 4.51), providing real-world applications of digital literacy in the curriculum motivates students (X = 4.52), recognizing and rewarding improvements in digital literacy skills encourages students (X = 4.48), creating a supportive and resource-rich learning environment enhances student motivation (X = 4.33), rewards or incentives would motivate students to improve digital literacy skills (X = 4.31), teachers should make digital literacy more engaging for students (X = 4.56), peer learning groups would help students improve in digital skills (X = 4.62), the college should better communicate the importance of digital literacy (X = 4.54) and that career-oriented digital literacy projects should be increased in the college (X =

4.33). The items on the scale had mean scores ranging from 4.13 to 4.62. All the strategies to enhance technical college students' digital literacy skills received a mean score of 4.13 and above and were therefore regarded as the strategies to enhance technical college students' digital literacy skills.

Discussion of Findings

Resources Needed for Integrating Digital Literacy into the Curriculum and Pedagogy The findings of this study revealed that incorporating computer laboratories into the school structure, alongside the provision of electricity and alternative sources of energy to power digital equipment, plays significantrole in enhancing digital literacy training. This supports the assertion of Kennedy (2017), who emphasized the importance of computer laboratories in providing access to technology and software tools that may otherwise be inaccessible to students within the traditional educational setting. Similarly, Spector, Merrill, Elen, and Bishop (2016) stressed the value of

multimedia resources—which integrate audio, video, text, graphics, and interactive elements—in delivering educational content dynamically and engagingly.

The results also demonstrated that the use of audiovisual materials as instructional tools is highly required for effective digital literacy skill acquisition. This aligns with the position of Fajemirokun (2019), who argued that acquiring digital literacy skills in technical colleges requires adequate facilities that support hands-on learning and foster technological proficiency. In line with recent studies and educational practices, resources such as application software, virtual environments, multimedia resources, and interactive learning materials are essential for effective digital literacy training.

Among the resources identified, internet facilities emerged as a top priority, underscoring the fact that connectivity is indispensable in digital literacy acquisition. This finding is consistent with McLean and Lynch (2019), who highlighted the importance of high-speed internet access in computer laboratories for enabling seamless online research, collaboration, and access to educational resources. Furthermore, peripheral tools such as printers, scanners, projectors, and other digital devices were also highlighted as necessary, as they broaden the scope of educational activities and enrich students' digital learning experiences. Collectively, these findings underscore the need for a holistic resource provision strategy that addresses both infrastructure (labs, electricity, internet) and instructional resources (software, multimedia, and peripherals) to ensure effective integration of digital literacy into the curriculum and pedagogy of technical colleges in Lagos State.

Strategies to Enhance the Acquisition of Digital Literacy Skills

The study also revealed several strategies that can enhance students' acquisition of digital literacy skills. These strategies include the introduction of rewards or incentives to motivate students, creating engaging and career-oriented projects, providing access to digital literacy mentors, and introducing competitions or challenges that stimulate students' interest and participation. This finding is consistent with Kane, Phillips, Copulsky, and Andrus (2019), who argued that organizations must not only adopt digital strategies but also implement coherent plans to reskill their workforce in order to remain competitive.

Additionally, the findings highlighted the importance of incorporating real-world applications of digital literacy into the curriculum and offering certifications that validate students' competencies. These measures not only motivate students but also strengthen their employability. The study further revealed that academic assessments should be administered using digital tools to encourage students' proficiency and reinforce the relevance of digital literacy in academic and career pursuits.

Effective communication about the importance of digital literacy and the provision of mentorship were also identified as critical. Mentors can guide students toward making informed decisions about digital career paths while fostering a culture of innovation and skill development. Furthermore, strategies such as interactive and practical learning activities, including project-based tasks and simulations, were seen as essential in promoting student participation and deeper engagement with digital tools. This resonates with Zheng et al. (2023), who found that collaborative learning not only enhances comprehension but also builds supportive communities, which can be particularly motivating for technical college students as they prepare for career engagement and employability.

In summary, the findings suggest that the enhancement of digital literacy in Lagos State technical colleges requires a combination of resource availability and well-designed strategies. Resource provision alone is insufficient; without innovative pedagogical approaches and structured

student engagement strategies, digital literacy acquisition will remain limited. Therefore, aligning resource investment with practical, interactive, and career-oriented strategies is essential to equip technical college students with the digital competencies needed for the 21st-century workforce.

Conclusion

The study concluded that effective integration of digital literacy into the curriculum and pedagogy of Lagos State technical colleges requires both adequate resource provision and innovative teaching strategies. Resources such as computer laboratories, reliable electricity supply with alternative power sources, high-speed internet connectivity, multimedia instructional tools, and peripheral devices are indispensable in fostering students' digital competence. However, resources alone cannot guarantee effective digital literacy training. The adoption of strategies such as mentorship, the use of career-oriented and project-based learning, digital assessments, and incentives to motivate learners are equally critical in enhancing students' digital literacy skills. Ultimately, aligning infrastructural development with pedagogical innovation will enable technical college students to acquire the competencies required to thrive in the 21st-century digital workforce.

Recommendations

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

1. Infrastructure Development: The government and stakeholders should prioritize the establishment and proper maintenance of computer laboratories in all technical colleges, alongside ensuring a stable electricity supply and alternative energy sources.
2. Provision of Internet Facilities: High-speed internet connectivity should be made available in technical colleges to support online research, collaboration, and access to global educational resources.
3. Investment in Instructional Tools: Colleges should be equipped with multimedia instructional resources, software applications, virtual environments, and peripheral devices (e.g., scanners, projectors, and printers) to enrich learning experiences.
4. Pedagogical Innovation: Teachers should adopt interactive teaching approaches such as project-based learning, simulations, and collaborative tasks that enhance students' engagement with digital tools.
5. Mentorship and Career Guidance: Qualified digital literacy mentors should be introduced into technical colleges to guide students in developing relevant career-focused skills and competencies.
6. Incentives and Recognition: Reward systems such as competitions, certifications, and career-oriented projects should be introduced to motivate students and validate their digital literacy skills.
7. Policy and Curriculum Integration: Education policymakers should integrate digital literacy as a compulsory component of technical college curricula and ensure regular reviews to align with evolving technological demands.

References

Bawden, D. (2008). Origins and concepts of digital literacy. In C. Lankshear & M. Knobel (Eds.), *Digital literacies: Concepts, policies and practices* (pp. 17–32). Peter Lang Publishing.

Fajemirokun, F. (2019). *Digital literacy and technical education in Nigeria: Challenges and opportunities*. Journal

of Technical and Vocational Education, 12(1), 55–67.

Fajemirokun, T. (2019). Challenges of integrating ICT in teaching and learning in Nigerian technical colleges. *International Journal of Technical and Vocational Education, 11*(2), 45–56.

Federal Ministry of Communications and Digital Economy. (2020). *National Digital Economy Policy and Strategy (2020–2030).* Abuja: Government of Nigeria.

Hwang, G. J., & Tseng, J. C. R. (2021). Effects of a virtual laboratory on students' conceptual understanding and problem-solving performance. *Computers & Education, 165*, 104149. https://doi.org/10.1016/j.compedu.2021.104149

Jebba, M. M., & Nordin, M. S. (2024). Skills gap assessment among TVET educators on adopting digital technologies in teaching at technical colleges. *International Journal of Academic Research in Progressive Education and Development, 13*(3). https://doi.org/10.6007/IJARPED/v13-i3/21776

Kane, G. C., Phillips, A. N., Copulsky, J. R., & Andrus, G. R. (2019). *The technology fallacy: How people are the real key to digital transformation*. MIT Press.

Kennedy, T. (2017). *The role of computer laboratories in advancing digital literacy*. International Journal of Educational Technology, 9(2), 33–41.

McLean, A., & Lynch, J. (2019). The importance of internet connectivity in digital literacy acquisition. *Journal of Digital Education and Learning*, 15(3), 44–59.

Oviawe, J. I., Uwameiye, R., & Uddin, P. S. O. (2017). Integrating 21st-century skills into teaching and learning of technical education in Nigeria: Teachers' perspectives. *Journal of Technical Education and Training, 9*(2), 13–25. https://doi.org/10.30880/jtet.2017.09.02.002

Quraishi, U., Ulusi, A., Moihd, R., Hakimi, A., & Olusi, F. (2023). Integrating digital literacy into higher education: Preparing graduates for the 21st-century workforce. *International Journal of Education and Development, 8*(1), 22–35.

Raish, V., & Rimland, E. (2016). Employer perceptions of critical information literacy skills and digital badges. *College & Research Libraries, 77*(1), 87–113. https://doi.org/10.5860/crl.77.1.87

Spector, J. M., Merrill, M. D., Elen, J., & Bishop, M. J. (2016). *Handbook of research on educational communications and technology* (4th ed.). Springer.

Tiamiyu, O. T., & Ajayi, O. A. (2020). Barriers to effective digital skills acquisition among Nigerian technical college students. *African Journal of Educational Technology, 5*(2), 101–115.

UNESCO. (2018). *A global framework of reference on digital literacy skills for Indicator 4.4.2.* Montreal: UNESCO Institute for Statistics.

UNICEF. (2020). *Digital literacy for children: Exploring definitions and frameworks.* Florence: UNICEF Innocenti.

Yorke, M. (2006). *Employability in higher education: What it is—what it is not.* York: Higher Education Academy.

Zheng, B., Lin, C. H., & Kwon, J. B. (2023). Collaborative learning in digital environments: Implications for employability skills. *Journal of Educational Research and Practice*, 18(4), 112–128.