

Investigating Teachers' Perceptions and use of Technology in Secondary Schools for business purposes

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KEY WORDS

Technology integration, teachers' perceptions, secondary education, ICT competence, Anambra state

ABSTRACT

The long-term mismatch between the availability of educational technologies and the appropriate use in classrooms in secondary schools is one of the primary concerns in Anambra State. The perception of teachers, their competences, and institutional constraints persist to express the level of meaningful technology application. This research examined the views of teachers regarding the use of technology in secondary schools in Anambra State. The study was guided by three objectives, three research questions, and three hypotheses. A descriptive survey research design was embraced. The sampling population was secondary school teachers, a representative sample of 500 teachers was taken. A structured questionnaire was used to collect data that had been validated by experts in educational technology and measurement and evaluation. Adequate statistical procedures were used to ensure reliability of the instrument. The results showed that teachers were usually positively inclined toward technology integration but showed moderate results regarding actual classroom integration. Poor infrastructure, lack of access to digital technologies, lack of training, and irregular power supply were important constraints that prevented effective integration. Moreover, educators who had attended earlier ICT training had better competence and levels of usage than their counterparts. The statistical analysis indicated that there were significant correlations among the perceptions of the teachers, the availability of the resources, and their teaching practices. The research concluded that teachers have positive intentions towards the integration of technology but systemic and capacity-related issues restrict effective integration. It suggested as well as better teacher training, infrastructure and supportive policies to reinforce technology integration in secondary schools.

1. Introduction

The use of technology in secondary schools for business purposes has become increasingly important in enhancing administrative efficiency and supporting educational management. Schools utilize digital technologies for record keeping, student registration, fee management, inventory control, payroll administration, and communication with parents and stakeholders. Computerized accounting systems enable accurate financial management, while online platforms facilitate marketing and information dissemination about school activities and achievements. Additionally, data management software assists school administrators in making informed decisions through timely access to relevant information. Since the dawn of the Information and Communication Technology (ICT) revolution, education systems in the world have changed dramatically from teacher centred to more interactive and learner centred and technology-driven pedagogies. The use of ICT in secondary education has become a necessity that is seen today as an integral part of the teaching and learning process, helping students access information, interact with others and further develop critical twenty first century skills. The introduction of educational technologies in the learning process at secondary school is no longer considered an optional innovation, but a strategic necessity to enhance the quality and relevance of education in the digital society (Abel et al., 2022; Lisia et al., 2024).

In the context of developing education like the Nigeria context, and especially in Anambra state, significant efforts have been made by both government and private school proprietors, and educational stakeholders to make technological resources available in secondary schools. These have involved the provision of computers, multimedia projectors, the Internet and other digital learning resources to support teaching. But the investments have not yet been well matched by the use of these ICT facilities in classroom teaching. Bolaji and Jimoh (2023) noted



that the mere availability of technological resources is not enough to guarantee that they will generate desired learning outcomes since some organizational and human factors are expected to influence their use. Many secondary schools, therefore, continue to have limited and low usage of ICTs, and the ICTs that are available are often used for administrative purposes and not as tools for teaching and learning the curriculum.

It is clear that there is still a gap between the availability and use of ICTs, suggesting the need for the role of teachers as essential actors in the process of technology integration. Teachers are the most front-line implementers of the curriculum and hence are critical in the success or failure of the technological resources used in the classroom. Teachers' perceptions of ICT have been shown to be consistently correlated with teachers' intention to use and implement digital technologies in the classroom. Teachers who see the usefulness, relevance, and ease of use of ICT are more likely to use the tools in their teaching, according to Abel et al. (2022). Likewise, Lisia et al. (2024) revealed that positive perceptions and attitudes towards technology had a significant effect on teachers' readiness to use ICT in the classroom. Moradi (2025) also noted that teachers' beliefs and perceptions are among the most powerful factors determining the successful implementation of technology in education, as they can impact the frequency of the use of ICTs in education and the quality of the use.

In addition to perception, the ICT competence of teachers is also an important factor in the use of technology. To integrate digital tools successfully, teachers need not only certain technical knowledge and skills, but also have a certain "operational confidence" in using different technological applications. Despite having a positive attitude towards innovation, teachers who are not competent in ICT may find it hard to use technologies available to them. Based on the self-efficacy theory, Rajapakse et al. (2024) found that the technological competence of teachers was a strong predictor of their readiness to incorporate emerging digital technologies in schools, as was their technological self-efficacy. This indicates that the adoption of ICT-based instructional practices is not only dependent on availability of ICTs but also on the ability of the teachers to effectively use ICTs in the teaching-learning process.

Moreover, the perceptions and competencies of teachers are embedded in a wider institutional context which can either enable or discourage the use of ICTs. Despite the best efforts of government and non-governmental organizations, educational institutions in many parts of Nigeria remain beset with enormous infrastructural challenges, such as unreliable electricity supply, poor internet connectivity, poor maintenance of technological equipment and lack of technical support personnel. Factors like this may make teachers reluctant to use ICT in teaching even if they are skilled and have positive attitude. Infrastructural inadequacies, technical problems, and institutional barriers were found to be the primary barriers to the effective integration of technology in educational settings by Demirbilek (2024). Likewise, Anthony Jnr et al. (2019) opined that transformative use of sustainable technology in public institutions needs to have supportive organizational policies, proper infrastructure and continuous capacity building programs.

The issues are more accentuated in Anambra State because of the varied socio-economic realities of the operation of secondary schools in that State. Although there are relatively better technological facilities in some urban schools, many urban schools still have some infrastructural challenges that make it difficult to improve the use of ICT in education and learning. Therefore, it is critical to first grasp the teachers' perception of educational technology, their level of competence and the barriers they face when designing effective intervention strategies. While there are numerous works that have explored the different facets of ICT integration in education, scant attention has been paid to the interaction between teachers' perception, ICT competencies and institutional constraints as encountered in the secondary school system of Anambra State. Previous studies have largely been at the national level or at the different levels of education, thus failing to explore the local context of secondary school teachers in the state. Therefore, this study aimed to close this gap because of teachers' perception and use of educational technology in secondary schools in Anambra State, hence the

study examines the role of teachers' perception and use of educational technology in secondary schools in Anambra State. The results of the study are proposed to give the Anambra State Ministry of Education, Post Primary Schools Service Commission (PPSSC), school administrators and other education stakeholders guidance as they design professional development programmes, enhance technological infrastructure and develop sustainable policies that will help facilitate effective integration of ICT and improve educational outcomes.

Research Questions

The following three research questions were formulated to guide the execution of this study:

1. What are the mean ratings of secondary school teachers regarding their perceptions of integrating ICT tools into classroom instruction?
2. To what extent do secondary school teachers utilize available educational technologies during day-to-day instructional delivery?
3. What are the primary institutional and structural constraints that prevent effective technology integration in secondary schools in Anambra State?

Methodology

The study employed descriptive survey research design to study the perceptions, use and constraints of integration of information and communication technology in secondary schools. This research was deemed appropriate for the following reasons: (1) a large number of responses could be gathered with no manipulation of variables; and (2) quantitative data could be collected without having to conduct experiments. The study used a structured survey approach to gather data on teachers' attitudes toward technology; teachers' use of technology and digital tools to support their teaching; and challenges associated with effective technology integration in schools. The study was carried out in Anambra State in the south eastern part of Nigeria. The state has three senatorial districts and twenty-one Local Government Areas, and is administered by the Post Primary Schools Service Commission into six educational zones. The chosen state had both urban and rural communities, making it an appropriate choice for the study to address the differences in access to and use of educational technologies by geographic location.

The population under study were all the public secondary school teachers of the Post Primary Schools Service Commission, Anambra State. The teachers were from different fields such as science, the arts, social studies and vocational education. A multi-stage sampling procedure was used for selecting a sample of 500 teachers. Three learning zones were randomly chosen from a total of six zones in the state. Secondly, 10 public secondary schools were randomly selected from each of the selected zones to give a total of 30 schools. Finally, using proportional stratified random sampling, teachers of both genders, subject specialization and profession levels were sampled to ensure adequate representation of the target population. The Teachers' Technology Perception and Utilization Scale was used to collect data, which was a researcher-developed instrument. The questionnaire comprised four parts, which were based on the theories of instructional technology. Demographics were obtained in the first section and teachers' perceptions of technology integration, their technology use, and institutional barriers to implementing technology in the second and third sections. The answers were given on a 4 Likert Scale.

It was face and content validated by three experts in Educational Technology and Measurement and Evaluation from University of Nigeria, Nsukka for validity. Their feedback and suggestions resulted in changes that clarified, made more relevant, and helped the instrument meet the study goals. A pilot study using 30 teachers with similar profile to the respondents of the main study was conducted to establish the reliability of the instruments, the results of which were similar. Cronbach's alpha was found to be 0.84, 0.81, 0.86 for the three sections of the questionnaire and 0.84 for the overall questionnaire respectively, suggesting high internal consistency. This instrument was distributed face-to-face with the help of six

trained research assistants. The data collecting was carried out on the selected schools for four weeks. Of the 500 questionnaires sent out, 482 were returned, for a response rate of 96.4 per cent. Data collected were analyzed with the application of Statistical Package for Social Sciences. Agreement and prevalence of the variables were determined using a criterion mean of 2.50, and mean scores and standard deviations were used to answer the research questions.

Results

Research Question 1: What are the mean ratings of secondary school teachers regarding their perceptions of integrating ICT tools into classroom instruction?

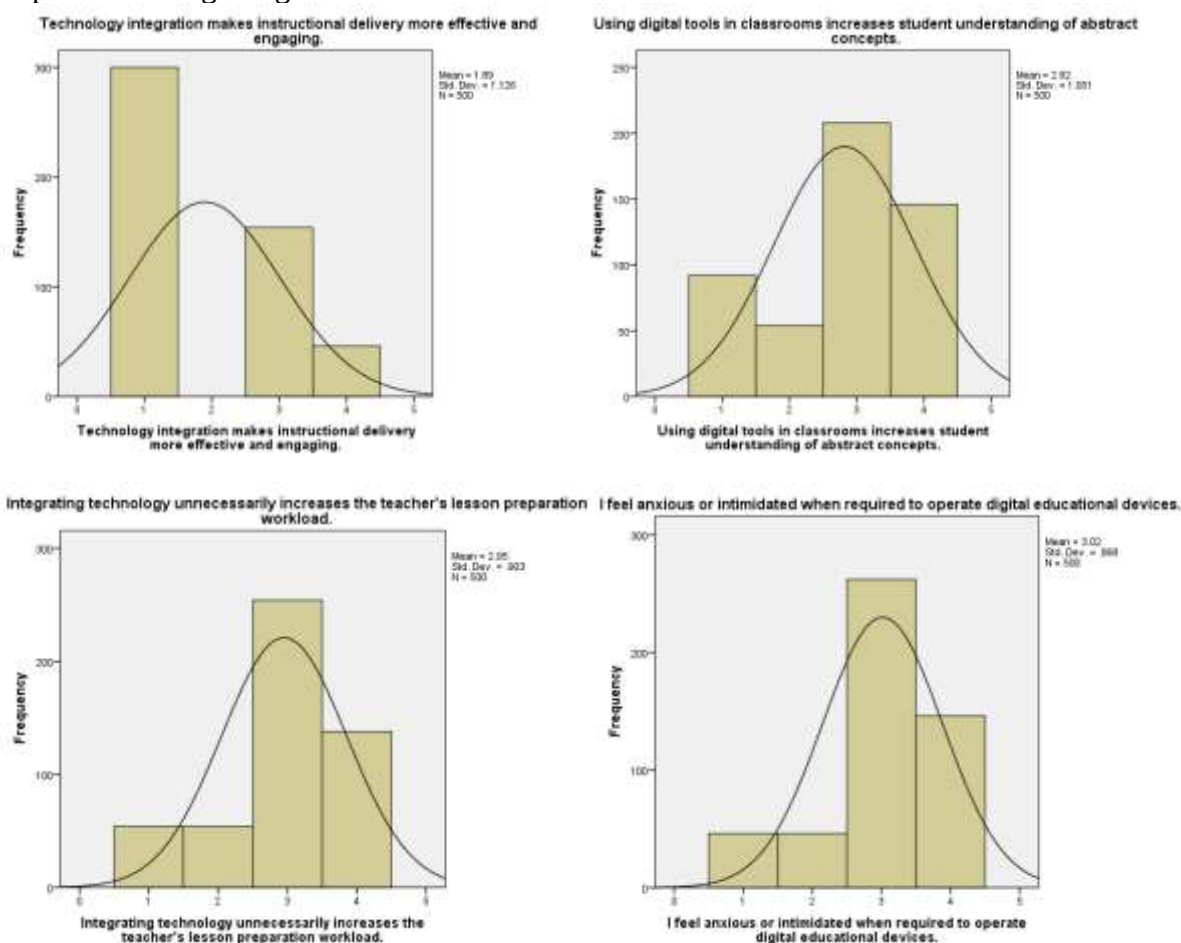


Figure 1 Mean ratings and standard deviations of teachers perceptions of integrating information and communication technology tools into classroom instruction

Figure 1 presents descriptive statistics for five hundred respondents which shows different views of secondary school teachers towards technology integration. Regarding the anxiety or intimidation when using digital devices, teachers' scores were found to be high with a mean score of 3.02 and a standard deviation of 0.868 as shown in Figure 1. Likewise, the data in Figure 1 indicates that the teachers concurred that the use of technology in the classroom is unnecessarily burdensome in terms of lesson preparation, with a mean of 2.95 and a standard deviation of 0.903. Respondents reported high disagreement for the digital tools to make teaching more effective and engaging (mean of 1.89, SD of 1.126, as shown in Figure 1), but agreed that digital tools improve students' understanding of abstract concepts (mean of 2.82, SD of 1.12).

Research Question 2: To what extent do secondary school teachers utilize available educational technologies during day-to-day instructional delivery?

Five hundred secondary school teachers were used to generate descriptive data represented in figure two, which shows that there are different levels of technology utilization. The use of virtual simulations or interactive quizzes is very common and results in the highest mean score of 3.60 (SD 0.490) as shown in Figure 2. Likewise, Figure 2 reveals that the students' practices in using educational software or Internet resources are also frequently done with mean score 2.94 and standard deviation 0.926, followed by a mean score of 2.91 in projecting multimedia slides and educational videos. On the other hand, the data presented in Figure 2 shows that the use of computer applications in lesson planning and processing the grades of students has a low mean of 2.43 with SD of 1.190.

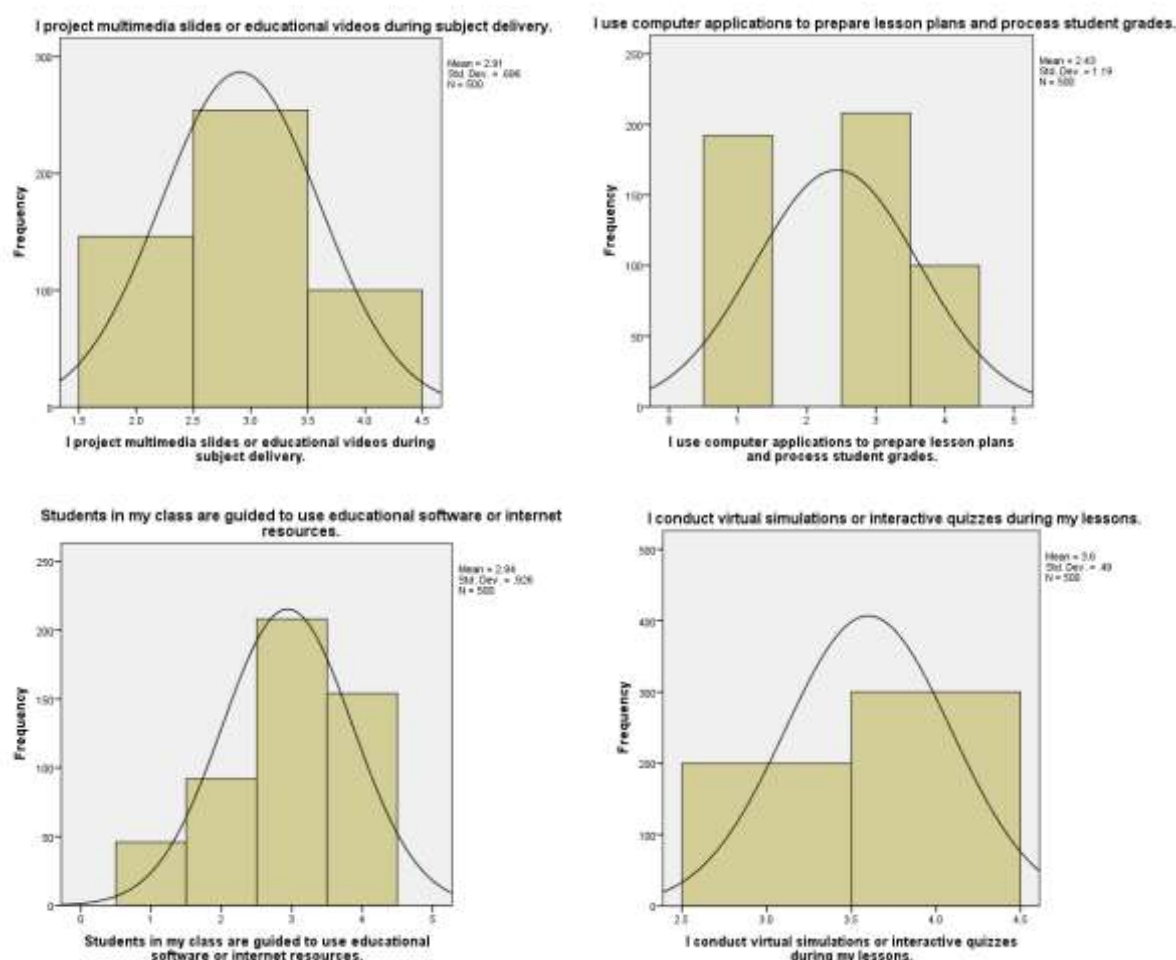


Figure 2 Mean ratings and standard deviations of teachers utilization of available educational technologies during day-to-day instructional delivery

Research Question 3: What are the primary institutional and structural constraints that prevent effective technology integration in secondary schools in Anambra State?

The descriptive data reported in Figure 3 is a description of the organizational constraints that 500 educators experienced. Inadequate number of functional computers and multimedia tools is the top rated barrier with a mean of 3.02 and a standard deviation of 0.868 (as presented in Figure 3). Data in Figure 3 also show that a lack of working backup generators and frequent loss of power are a major limitation, with a mean of 2.95 and a standard deviation of 0.903. Also, as shown in Figure 3, the lack of structured and continuous professional information and communication technology training recorded a score of 2.92, and the lack of dedicated on-site technical support staff recorded a score of 2.91 with a SD of 0.696.

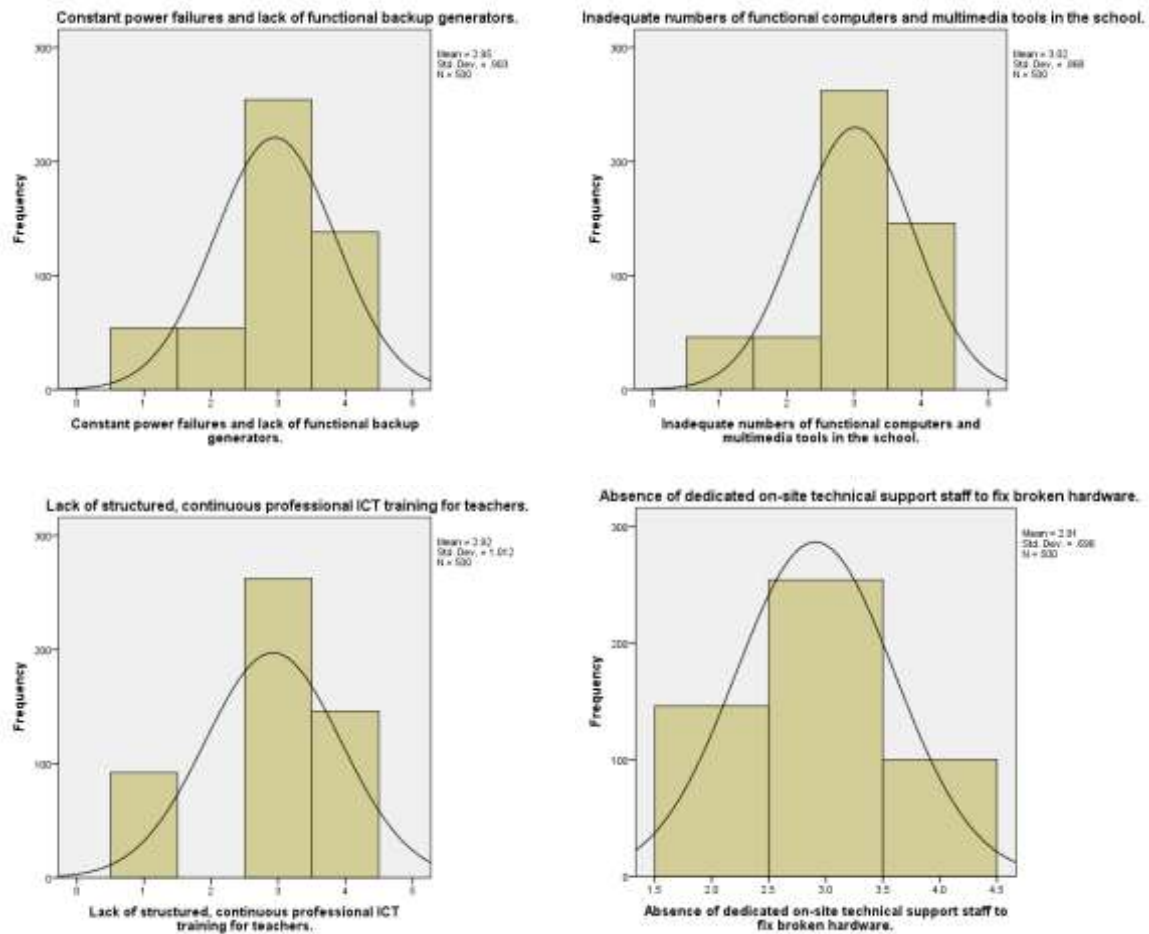


Figure 3 Mean ratings and standard deviations of institutional and structural constraints preventing effective technology integration in secondary schools

Discussion

The results of Research Question 1 showed that the secondary school teachers generally had positive perception on the integration of ICT with a high mean score in terms of the effectiveness of ICT to improve the instructional delivery ($M = 1.89$). This result corroborated the findings of Lisia et al. (2024) which indicated that teachers considered ICT as an important tool in enhancing their teaching effectiveness and learners' engagement. In a similar vein, Abel et al. (2022) concluded that teachers have an expectation that the use of technology is vital for improving classroom interactions and active learning. Moreover, teachers to a moderate extent agreed that digital tools aid in students' comprehension of abstract concepts ($M = 2.82$). The result aligned with Gokcimen and Das (2024) who noticed that conceptual understanding is facilitated by the use of interactive and visual learning experiences in the learning process by using ICT. However, there were respondents who raised concerns about the increased workload of lesson preparation when technology is integrated ($M = 2.95$), which corresponds with other findings by Abel et al. (2022) that indicated that insufficient time and preparation demands was among the common barriers to ICT adoption. Further, teachers felt anxious about their use of digital devices ($M = 3.02$). In a related study by Rajapakse et al. (2024), psychological and emotional aspects as well as technological self-efficacy were shown to be important factors in teachers' preparedness to embrace the incorporation of emerging technologies.

Training was found to be moderately used in instructional practice following results from the second research question. The use of multimedia resources was observed in lessons by teachers, which was common practice ($M = 2.91$). This is consistent with Lisia et al. (2024)

results that found that multimedia resources are one of the most frequently used instructional resources by teachers. The use of computer applications for lesson planning and grading was on the lower side ($M = 2.43$). However, Bolaji and Jimoh (2023) noted that although the benefits of ICT for administration and instruction are great, the utilization of it is limited. The results revealed that teachers moderately facilitated the use of learning software and internet resources ($M = 2.94$), which is similar to what Moradi et al. (2025) reported on teachers' use of digital learning resources. Interestingly, the virtual simulation and interactive Quiz had the highest mean ($M = 3.60$). This result aligns with recent studies that have demonstrated that interactive digital platforms have a positive impact on learner participation and engagement in the classroom (Moradi, 2025). Teachers have also helped students access digital materials to help them learn independently and participate in group activities. The value of effective use of available resources in achieving good results has been highlighted in various academic studies (Okosa, 2022a; Okosa et al., 2025; Okosa, 2018; Udensi & Okosa, 2025; Okosa, 2022b). Thus, the use of technology in secondary Schools still plays an important role in enhancing teaching and learning outcomes.

As far as Research Question 3 is concerned the findings showed that there are significant institutional constraints in the integration of ICT. The most prominent challenge was inadequate numbers of functional computers and multimedia tools ($M = 3.02$). This result was consistent with Demirbilek (2024), who identified the lack of infrastructure as one of the key challenges in the effective use of technology. Frequent power outages ($M = 2.95$) also were a major limitation, especially in educational environments. Similarly, Lisia et al. (2024) found that inadequate technological infrastructure and unstable internet connections are barriers to technology use in a related study. Moreover, the findings of no continuous ICT training ($M = 2.92$) support the findings of Abel et al. (2022) that pointed to the importance of PD for successful ICT adoption. The lack of technical support staff ($M = 2.91$) also corroborates the views of Anthony et al. (2019), which indicate that the implementation of sustainable ICTs should be accompanied by ongoing technical support and institutional support. This has been highlighted in various studies on scholarship in Nigeria, notwithstanding those of broader educational and sociocultural contexts (Ilukwe & Ume, 2026; Ilukwe & Ume, 2025; Ilukwe, 2021; Ilukwe, 2026; Ilukwe, 2025). Therefore, overcoming these barriers is a crucial step towards successful sustainable ICT integration in secondary schools.

Conclusion

This study offers empirical evidence that digital transformation of secondary education in Anambra State is not possible without the procurement of hardware. Secondary school teachers in the State have very positive attitudes towards their professional practice and understand the importance of using technology in teaching. Yet, this theoretical preparedness is curtailed by low levels of operational competence, psychological anxiety as well as entrenched structural weaknesses. Many teachers are forced to use traditional information processes (analogue) due to the persistent reality of erratic electricity services, absence of systematic teachers training workshops in the school and lack of internet access. Importantly, this study shows that these operational barriers are equally experienced by both male and female teachers and that focused ICT professional development is a great lever to promote the use of ICT in the classroom. The actual amount of digital use behavior can be attributed to a large extent to the teacher's digital competence. The Anambra State Ministry of Education, Post Primary Schools Service Commission and institutional stakeholders should continue to focus on the acquisition of hardware instead of consistent human capacity building and basic electrical infrastructures, otherwise state education technology investments will not be utilized. To transform state secondary schools, a comprehensive and adequately funded approach is needed, involving the adequate deployment of physical resources, on-going teacher training and adequate infrastructural support.

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