

ENGLISH LANGUAGE TEACHERS' PERCEPTION AND UTILIZATION OF SMART CLASSROOM TECHNOLOGIES FOR FUTURE-READY INSTRUCTION IN NSUKKA EDUCATION ZONE

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Abstract

This study examined English language teachers' perception and utilization of smart classroom technologies for future-ready instruction in Nsukka Education Zone, Enugu State, Nigeria. The study was guided by three research questions and two null hypotheses. A descriptive survey research design was adopted. The population of the study comprised 122 English language teachers in public secondary schools in Nsukka Education Zone. Since the population was manageable, the entire population was used for the study; therefore, no sampling was carried out. Data were collected using a structured questionnaire titled English Language Teachers' Perception and Utilization of Smart Classroom Technologies Questionnaire (ELTPUSCTQ). The instrument was validated by experts and its internal consistency was established using Cronbach's Alpha, which yielded a reliability coefficient of 0.83. Mean and standard deviation were used to answer the research questions, while the null hypotheses were tested using the independent-samples t-test at the 0.05 level of significance. The findings revealed that English language teachers generally had positive perceptions of smart classroom technologies and utilized them to a high extent for future-ready instruction. Teachers acknowledged that smart classroom technologies enhanced students' engagement, interaction, motivation, and creativity in English language learning. However, the utilization of advanced online learning platforms such as Google Classroom and Zoom was relatively low. The study further identified inadequate ICT facilities, poor internet connectivity, unstable electricity supply, inadequate training, and insufficient technical support as major challenges to the effective utilization of smart classroom technologies. The hypothesis testing revealed that there was no significant difference in the mean perception and utilization scores of male and female English language teachers regarding smart classroom technologies. The study concluded that although teachers demonstrated positive perceptions and considerable utilization of smart classroom technologies, their effective integration for future-ready instruction is constrained by infrastructural and institutional challenges rather than gender. The study recommended that government, educational authorities, and school administrators improve ICT infrastructure, provide continuous professional development for teachers, and ensure reliable electricity supply and internet connectivity to promote the effective integration of smart classroom technologies in English language instruction.

Keywords: English language, smart classroom technologies, teachers' perception, future-ready instruction, utilization

Introduction

In Nigeria, English is the official language of teaching from upper primary through tertiary levels and it is a core subject. It continues to be crucial for academic success, national communication, and governance in a linguistically diverse country. English language is used in Nigerian educational institutions for the majority of instructional activities in addition to being a subject of study. English language according to Crystal (2003) is a global language that is widely used for international communication across

cultures and nations. Similarly, According to Rose, McKinley, and Galloway (2021), English is a universal language that is used to communicate across linguistic and cultural barriers and is essential for business, education, research, and international relations. According to McKay (2018), English is an international language that serves as a medium of communication among people from various linguistic and cultural backgrounds in education, business, science, and other worldwide contexts. Again, Galloway and Rose (2018), assert that the modern use of English extends beyond native speaker contexts, serving as an international language for communication, education, business, and intercultural contact. English has taken on this dominant role in Nigeria because the country is multilingual, which means that no single indigenous language serves as a national lingua franca for all the ethnic groups. The Federal Republic of Nigeria (2014) National Policy on Education further emphasizes the significance of the English language. The policy clearly stipulates that English shall be used as the medium of instruction from upper primary through tertiary education, while indigenous languages are encouraged at the lower basic level to promote cultural identity and early cognitive development. The policy also recognizes English as a core subject essential for communication, academic progression, and national integration. This position has recently been reaffirmed in national education policy reviews, where English continues to be maintained as the official language of teaching across all levels of education in Nigeria due to its unifying function and practical relevance in a multilingual society

Despite this policy emphasis, many secondary schools confront ongoing issues in teaching and mastering English. Students sometimes struggle with comprehension, proper grammar usage, essay writing, and oral communication. These difficulties have been connected to traditional teacher-centered teaching practices, which restrict active participation and meaningful engagement in language use. In response to these difficulties, there has been a global shift toward the incorporation of information and communication technology (ICT) into education. ICT is rapidly being used to promote teacher effectiveness, learner engagement, and interactive classroom experiences. ICT is increasingly being integrated into teaching and learning to improve instructional effectiveness, learner engagement, and the development of digital competencies (Msafiri, Kangwa, & Cai, 2023). According to UNESCO (2023), digital technologies are becoming crucial instruments in modern education systems since they increase access to learning and encourage the development of digital skills required in today's society. The introduction of smart classroom technologies is a significant advancement in ICT integration. Smart classrooms are learning settings that use digital resources such as multimedia projectors, interactive whiteboards, internet-enabled gadgets, online learning platforms, and instructional software. These technologies allow teachers to offer lessons in more interactive and interesting ways, while also increasing student participation. Smart classroom environments have been found to improve student engagement, cognitive participation, and instructional efficacy (Hou, 2024; Ma, Zuo, Gao, Yan, & Luo, 2024).

Smart classroom technology, such as multimedia exposure, authentic language materials, and interactive learning platforms, can help English language students improve their communication abilities. Students can use videos, online dictionaries, and language apps to make learning more practical and enjoyable. This is consistent with the goals of the Nigerian National Policy on Education, which stresses functional education that provides students with communication skills and prepares them for societal involvement (FRN, 2014). The increased demand for future-ready learning has fostered the need for technological integration in education. Future-ready instruction is a teaching strategy that prepares students for 21st-century abilities such as communication, cooperation, creativity,

critical thinking, and digital literacy. These skills are required for effective operation in a quickly changing digital world.

However, the effectiveness of smart classroom integration in English language classroom is primarily dependent on teachers. Teachers' perceptions have a significant impact on whether digital tools are adopted and used effectively in classroom education. Perception refers to teachers' views and attitudes about the utility and usability of instructional tools. Perception is described as the cognitive process through which individuals select, organize, and interpret information from their environment to give it meaning (Luthans & Hodgetts, 2005). Teachers' perceptions play an important role in determining whether digital technologies are accepted and effectively integrated into classroom instruction. Eryansyah and Erlina (2023) reported that teachers with positive perceptions of ICT demonstrated greater willingness to integrate digital technologies into English language teaching. According to the Technology Acceptance Model (Davis, 1989), people are more likely to adopt technology that they believe is valuable and simple to use.

Although many teachers realize the importance of ICT in education, the actual use of smart classroom tools varies greatly. Peng et al. (2023) reported that teachers' digital competence, self-efficacy, and institutional support significantly influenced their level of technology integration during classroom instruction. While some teachers often use PowerPoint presentations, videos, and online materials, others make only limited use of modern platforms like Google Classroom and Zoom. This contradiction implies that having access to technology does not guarantee that it will be used effectively in the classroom.

In addition, various hurdles continue to impede the successful use of smart classroom devices in schools. These include insufficient ICT infrastructure, unpredictable power supply, poor internet access, lack of technical support, insufficient training, and the expensive cost of digital resources. Studies have shown that these limitations hinder effective technology integration in schools (Aduwa-Ogiegbaen & Iyamu, 2005). Similar challenges have been reported by Msafiri et al. (2023), who identified inadequate ICT infrastructure, limited internet connectivity, inadequate teacher training, and insufficient institutional support as major barriers to effective technology integration in secondary schools. Similarly, UNESCO (2023) states that the successful integration of digital technology in education is dependent on suitable infrastructure, dependable electricity, internet access, inexpensive digital resources, and ongoing teacher capacity development. According to UNESCO, shortcomings in these areas continue to impede the successful adoption and implementation of educational innovations, particularly in developing countries. Gender can also influence instructors' perceptions and use of smart classroom technologies.

Gender has been recognized as a demographic element that may influence teachers' preparation, competence, and use of educational technology. However, empirical data has yielded inconsistent results. For example, Igboanugo (2024) found that gender strongly influenced Nigerian teachers' willingness to incorporate digital technology into classroom education. Similarly, Mahmood et al. (2025) discovered substantial disparities in male and female English language teachers' attitudes and challenges about the use of Information and Communication Technology (ICT) for instruction. In contrast, Oguezue (2025) discovered that, while teachers displayed excellent competence in technology integration, gender had no significant effect on their perceived ability. Similarly, Ifinedo et al. (2020) discovered that technology integration among Nigerian teacher educators was predominantly influenced by technological expertise, ICT pedagogical techniques, and

teaching experience, not demographic variables. Similarly, Viberg et al. (2025) found no significant gender variations in teachers' trust in AI-enabled educational tools across six nations. These disparate findings indicate that the impact of gender on instructors' perceptions and use of smart classroom devices is still unclear. As a result, there is a need to research whether gender effects English language instructors' perception and use of smart classroom technologies for future-ready instruction in the Nsukka Educational Zone. This situation limits students' opportunities for interactive and technology-enhanced language learning. These challenges continue to constitute major impediments to the effective integration of ICT-supported instruction in many developing educational systems. Although increasing attention has been given to ICT integration in education, there is still limited empirical evidence on how English language teachers in Nsukka Education Zone perceive and utilize smart classroom technologies for future-ready instruction within the context of Nigeria's educational policy expectations. Furthermore, existing studies have reported inconsistent findings regarding the influence of gender on teachers' perception and utilization of educational technologies, leaving this issue unresolved. This underscores the need for further investigation in the local context. Therefore, this study examined English language teachers' perception and utilization of smart classroom technologies for future-ready instruction in Nsukka Education Zone and investigated whether gender influences their perception and utilization of these technologies.

Statement of the Problem

The increasing demand for digital literacy and twenty-first-century competencies has made the integration of smart classroom technologies essential in contemporary secondary education. Ideally, English language instruction is expected to be technology-driven, interactive, and learner-centered, with teachers effectively integrating tools such as multimedia projectors, interactive whiteboards, mobile learning applications, and online platforms to enhance students' engagement, communication skills, creativity, and overall English language achievement. In such an ideal classroom, learners actively participate in digitally enriched lessons that promote collaboration, independent learning, and improved English language proficiency. However, the reality in many Nigerian secondary schools shows a persistent reliance on traditional lecture-based methods, with limited and inconsistent use of available digital instructional tools. In Nsukka Education Zone specifically, challenges such as inadequate ICT infrastructure, unstable electricity supply, poor internet connectivity, insufficient teacher training, and limited technical support continue to hinder effective utilization of smart classroom technologies. Consequently, many English language lessons remain teacher-centered, reducing students' exposure to interactive and technology-enhanced learning experiences needed for future-ready education.

Although several studies have examined ICT integration in education, most of these studies have focused on general ICT usage and technology adoption in teaching without sufficient attention to the specific application of smart classroom technologies in English language instruction. In particular, limited empirical evidence exists on English language teachers' perception of smart classroom technologies and the extent to which such perceptions translate into actual classroom utilization for future-ready instruction, especially within Nsukka Education Zone. This creates a clear empirical and contextual gap in knowledge regarding how English language teachers perceive and utilize smart classroom technologies in secondary schools. It is therefore against this background that this study investigates English language teachers' perception and utilization of smart classroom technologies for future-ready instruction in Nsukka Education Zone.

Purpose of the Study

The general purpose of this study is to examine English language teachers' perception and utilization of smart classroom technologies for future-ready instruction in Nsukka Education Zone. Specifically, the study determined:

1. English language teachers' perception of smart classroom technologies in secondary schools
2. the extent to which English language teachers utilize smart classroom technologies for instructional delivery
3. the challenges affecting the utilization of smart classroom technologies in English language instruction
4. the influence of gender on English language teachers' perception of smart classroom technologies
5. the influence of gender on English language teachers' utilization of smart classroom technologies for instructional delivery

Research Questions

The following research questions guided the study:

1. What is the perception of English language teachers toward smart classroom technologies in Nsukka Education Zone?
2. To what extent are smart classroom technologies utilized by English language teachers for instructional delivery?
3. What challenges affect the utilization of smart classroom technologies in English language instruction?
4. What is the difference in the mean perception scores of male and female English language teachers toward smart classroom technologies?
5. What is the difference in the mean utilization scores of male and female English language teachers regarding smart classroom technologies?

Hypotheses

H₀₁: There is no significant difference in the mean perception scores of male and female English language teachers toward smart classroom technologies in Nsukka Education Zone.

H₀₂: There is no significant difference in the mean utilization scores of male and female English language teachers regarding smart classroom technologies for instructional delivery in Nsukka Education Zone.

Methods

The study adopted a descriptive survey research design to examine English language teachers' perception and utilization of smart classroom technologies in Nsukka Education Zone, Enugu State. This design was considered appropriate because it allows for the collection of data on existing conditions without manipulating variables. The study area comprises public secondary schools in Nsukka Education Zone where English language is taught as a core subject, and where varying levels of ICT integration are evident. The population of the study was 122 English language teachers in the 62 public secondary schools in the area of the study. There was no sampling due to the manageable size of the population. Data were collected using a structured questionnaire titled English Language Teachers' Perception and Utilization of Smart Classroom Technologies Questionnaire (ELTPUSCTQ). The instrument elicited information on teachers' perception, extent of utilization, and challenges associated with the use of smart classroom technologies. The instrument was validated by three experts, two from the Department of Arts Education (English Language Education Unit) and one from the Department of Science Education (Measurement and Evaluation Unit) all from the Faculty of Education,

University of Nigeria, Nsukka. The questionnaire was divided into three clusters. The instrument consisted of close-ended items structured on a four-point rating scale. Cluster A and C were rated as Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), while Clusters B was rated as Very High Extent (VHE), High Extent (HE), Low Extent (LE), and Very Low Extent (VLE). The reliability of the instrument was established using Cronbach Alpha, which yielded an acceptable coefficient 0.82. Data were collected through direct administration of the questionnaire. Analysis was carried out using mean and standard deviation for research questions. A criterion mean of 2.50 was used as the benchmark for decision-making.

Results

Table 1:

Mean and Standard Deviation of the perception of English language teachers toward smart classroom technologies for future-ready instruction.

S/N	Item Statement	Mean	SD	Decision
1	Smart classroom technologies improve students' engagement during English language lessons.	3.41	0.56	Agree
2	Smart classroom technologies make English language teaching more interactive.	3.41	0.56	Agree
3	The use of digital instructional tools enhances students' understanding of English language concepts.	3.44	0.52	Agree
4	Smart classroom technologies promote learner-centered instruction.	3.44	0.52	Agree
5	I feel confident using smart classroom technologies during instruction.	3.46	0.50	Agree
6	Smart classroom technologies improve students' communication skills.	3.43	0.51	Agree
7	The integration of digital technologies increases students' motivation to learn English language.	3.44	0.52	Agree
8	Smart classroom technologies are relevant for future-ready instruction.	3.46	0.50	Agree
9	Smart classroom technologies improve collaboration among students during lessons.	3.43	0.51	Agree
10	The use of digital technologies enhances creativity in English language learning.	3.43	0.51	Agree
Cluster Mean		3.44	0.52	Agree

The results in Table 1 indicate that English language teachers generally agreed that smart classroom technologies are valuable for future-ready instruction. The mean ratings for the ten perception items ranged from 3.41 to 3.46, with all items falling within the Agree category. This suggests that the respondents held favourable views regarding the role of smart classroom technologies in enhancing student engagement, promoting interactive and learner-centred instruction, improving communication and collaboration, strengthening learners' understanding of English language concepts, and preparing students for technology-driven learning environments. The overall cluster mean of 3.44 (SD = 0.52) further indicates a generally positive perception of smart classroom technologies among English language teachers in Nsukka Education Zone.

Table 2: Mean and Standard Deviation of Utilization of Smart Classroom Technologies for Future-Ready Instruction

S/N	Item Statement	Mean	SD	Decision
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11	I use PowerPoint presentations during English language lessons.	3.39	0.55	High Extent
12	I use multimedia projectors during classroom instruction.	3.39	0.55	High Extent
13	I use YouTube instructional videos for teaching English language concepts.	3.41	0.53	High Extent
14	I use mobile learning applications during instruction.	3.40	0.60	High Extent
15	I use online learning platforms such as Google Classroom or Zoom.	1.67	0.51	Low Extent
16	I use digital instructional materials to support reading comprehension lessons.	3.43	0.54	High Extent
17	I use smart classroom technologies to teach oral English.	3.42	0.54	High Extent
18	I integrate digital tools into essay writing instruction.	3.44	0.52	High Extent
19	I use online resources for teaching grammar and vocabulary.	3.42	0.53	High Extent
20	I frequently integrate smart classroom technologies into classroom instruction.	3.40	0.54	High Extent
Cluster Mean		3.18	0.54	High Extent

The results in Table 2 show that English language teachers generally utilized smart classroom technologies to a high extent in their instructional delivery. The item mean scores ranged from 1.67 to 3.44. Teachers reported a high extent of using PowerPoint presentations, multimedia projectors, YouTube instructional videos, mobile learning applications, digital instructional materials, smart classroom technologies for oral English, digital tools for essay writing, online resources for teaching grammar and vocabulary, and smart classroom technologies in classroom instruction. However, respondents reported a low extent of using online learning platforms such as Google Classroom or Zoom ($M = 1.67$, $SD = 0.51$). The overall cluster mean of 3.18 ($SD = 0.54$) indicates that English language teachers generally utilized smart classroom technologies to a high extent for future-ready instruction in Nsukka Education Zone.

Table 3: Mean and Standard Deviation of Challenges Affecting the Utilization of Smart Classroom Technologies for Future-Ready Instruction

S/N	Item Statement	Mean	SD	Decision
21	Inadequate ICT facilities hinder effective utilization of smart classroom technologies.	3.43	0.53	Agree
22	Poor internet connectivity affects the use of digital instructional tools.	3.43	0.53	Agree
23	Unstable electricity supply limits the use of smart classroom technologies.	3.45	0.52	Agree
24	Lack of adequate training affects teachers' ability to utilize smart classroom technologies.	3.43	0.51	Agree
25	Lack of technical support discourages technology integration in schools.	3.41	0.54	Agree
26	High cost of digital facilities affects technology utilization.	3.42	0.53	Agree

27	Insufficient time during lessons affects the use of smart classroom technologies.	3.43	0.54	Agree
28	Some teachers lack digital competence required for effective technology integration.	3.43	0.53	Agree
29	Inadequate administrative support affects the use of smart classroom technologies.	3.40	0.56	Agree
30	Limited access to digital devices affects instructional delivery.	3.39	0.55	Agree
Cluster Mean		3.43	0.53	Agree

The results in Table 3 reveal that English language teachers agreed that several factors constitute major challenges to the effective utilization of smart classroom technologies for future-ready instruction in Nsukka Education Zone. The mean ratings ranged from 3.39 to 3.45, indicating agreement on all the identified challenge items. Specifically, respondents agreed that inadequate ICT facilities, poor internet connectivity, unstable electricity supply, inadequate training, lack of technical support, the high cost of digital facilities, insufficient instructional time, limited digital competence among some teachers, inadequate administrative support, and limited access to digital devices all hinder the effective integration of smart classroom technologies into English language instruction. The cluster mean of 3.43 with a cluster standard deviation of 0.53 indicates a consensus among the respondents that these factors significantly impede the utilization of smart classroom technologies for future-ready instruction in public secondary schools within Nsukka Education Zone.

H₀₁: There is no significant difference in the mean perception scores of male and female English language teachers toward smart classroom technologies in Nsukka Education Zone.

Teacher's Gender	N	Mean	SD	Std. Error Mean
Male	38	3.42	0.50	0.08
Female	84	3.48	0.50	0.05

Table 4 shows that 38 male and 84 female English language teachers participated in the study. The male teachers obtained a mean perception score of 3.42 (SD = 0.50), while the female teachers obtained a slightly higher mean score of 3.48 (SD = 0.50). This suggests that female teachers exhibited a marginally more positive perception of smart classroom technologies than their male counterparts. However, this difference in mean scores alone does not indicate whether the difference is statistically significant. Statistical significance is determined from the Independent Samples Test table.

Table 5: Independent-Samples t-test of the Difference in the Mean Perception Scores of Male and Female English Language Teachers toward Smart Classroom Technologies

variable	Teacher's Gender	N	Mean	SD	t	Df
Perception	Male	38	3.42	0.50	-0.56	120
	Female	84	3.48	0.50		

The result in Table 5 shows that there was no statistically significant difference in the mean perception scores of male and female English language teachers toward smart classroom technologies in Nsukka Education Zone ($t(120) = -0.56$, $p = 0.575$). Although female teachers (Mean = 3.48, SD = 0.50) had a slightly higher mean perception score

than male teachers (Mean = 3.42, SD = 0.50), the difference was not statistically significant. Therefore, the null hypothesis was not rejected, indicating that teachers' gender did not significantly influence their perception of smart classroom technologies for future-ready instruction.

Table 6: Group Statistics for Male and Female English Language Teachers' Mean Utilization Scores of Smart Classroom Technologies

Teacher's Gender	N	Mean	SD	Std. Error Mean
Male	38	3.26	0.45	0.07
Female	84	3.29	0.46	0.05

Table 6 shows that 38 male and 84 female English language teachers participated in the study. The male teachers obtained a mean utilization score of 3.26 (SD = 0.45), while the female teachers obtained a slightly higher mean utilization score of 3.29 (SD = 0.46). This indicates that female teachers reported a marginally higher level of utilization of smart classroom technologies than male teachers. However, this difference in the mean scores alone does not establish statistical significance. The decision on the hypothesis depends on the Independent Samples Test.

H₀₂: There is no significant difference in the mean utilization scores of male and female English language teachers regarding smart classroom technologies for instructional delivery in Nsukka Education Zone.

Table 7: Independent Samples t-test of the Difference in the Mean Utilization Scores of Male and Female English Language Teachers Regarding Smart Classroom Technologies for Instructional Delivery in Nsukka Education Zone

variable	Teacher's Gender	N	Mean	SD	t	df
Perception	Male	38	3.26	0.45	-0.35	120
	Female	84	3.29	0.46		

The result presented in Table 7 shows that there was no statistically significant difference in the mean utilization scores of male and female English language teachers regarding smart classroom technologies for instructional delivery in Nsukka Education Zone, $t(120) = -0.35$, $p = .731$. Although female teachers recorded a slightly higher mean utilization score ($M = 3.29$, $SD = 0.46$) than male teachers ($M = 3.26$, $SD = 0.45$), the observed difference was not statistically significant. Therefore, the null hypothesis was not rejected. This implies that gender did not significantly influence the extent to which English language teachers utilized smart classroom technologies for instructional delivery in Nsukka Education Zone.

Discussions of Findings

The findings of the study showed that English language teachers in Nsukka Education Zone generally have favourable perceptions toward the use of smart classroom technologies for future-ready instruction. The teachers agreed that smart classroom technologies improve students' engagement during lessons, make teaching more interactive, increase students' motivation, and enhance creativity in learning English language. The respondents also considered smart classroom technologies important for learner-centered and future-ready instruction. This finding suggests that teachers are becoming more aware of the relevance of digital technologies in modern classroom instruction. The positive perception expressed by the teachers may be connected to the increasing emphasis on technology integration in education and the growing need to equip learners with digital and communication skills required in the 21st century.

The finding is consistent with Ma et al. (2024), who reported that smart classroom environments positively influence learners' engagement and instructional effectiveness. The result also agrees with Wu (2024), who found that teachers' positive perception of instructional technologies influences their readiness to adopt such technologies in classroom teaching. In the same vein, Hou (2024) observed that technology-supported classrooms improve interaction and participation during instruction. The finding further supports the Technology Acceptance Model developed by Davis (1989), which explains that individuals are more likely to adopt technologies they perceive as useful and easy to use. This implies that teachers who see smart classroom technologies as beneficial are more likely to accept and integrate them into English language instruction.

Furthermore, the findings revealed that English language teachers utilize smart classroom technologies to a high extent in classroom instruction. The teachers reported frequent use of PowerPoint presentations, YouTube instructional videos, multimedia projectors, and digital instructional materials in teaching English language. However, the use of online learning platforms such as Google Classroom and Zoom was relatively low. The high utilization of some smart classroom technologies indicates that teachers are gradually incorporating digital tools into instructional delivery. This may be due to increased awareness of the instructional benefits of technology and the availability of some basic digital resources in schools. The use of multimedia resources in English language teaching may also help teachers present lessons in more practical and engaging ways.

However, the low utilization of online learning platforms suggests that some aspects of digital instruction are still not fully integrated into classroom practice. This may be linked to limited internet access, inadequate training, or insufficient technological facilities in schools. This finding agrees with Chua et al. (2023), who observed that teachers often make greater use of basic digital instructional tools than more advanced online learning systems. The finding also supports Hou (2024), who noted that although teachers acknowledge the importance of technology integration, actual utilization is sometimes affected by school-related challenges and limited technological support. The implication of this finding is that although English language teachers are making efforts to integrate smart classroom technologies into instruction, more support is still needed to encourage wider and more effective utilization of digital learning platforms for future-ready instruction. The findings of the study showed that several factors hinder the effective utilization of smart classroom technologies in English language instruction. The major challenges identified by the teachers include unstable electricity supply, poor internet connectivity, inadequate ICT facilities, and high cost of digital technologies, lack of training opportunities, insufficient technical support, and limited access to digital devices.

The finding indicates that infrastructural and institutional challenges remain major obstacles to effective technology integration in schools. Although teachers may have positive attitudes toward smart classroom technologies, these challenges make it difficult for them to consistently use digital tools during instruction. The finding is in line with UNESCO (2023), which reported that inadequate infrastructure and insufficient teacher support continue to affect effective ICT integration in many developing countries. The result also agrees with Hou (2024), who found that poor internet connectivity and limited technological facilities reduce teachers' ability to effectively utilize smart classroom technologies in classroom instruction. Similarly, Chua et al. (2023) observed that lack of technical support and limited access to digital resources are among the major barriers to sustained technology use in schools. This finding suggests that successful implementation

of smart classroom technologies depends not only on teachers' willingness to use them but also on the availability of adequate facilities and institutional support. Overall, the findings imply that improving ICT infrastructure, internet access, electricity supply, and teacher training is necessary for effective integration of smart classroom technologies in English language teaching and learning.

The study further revealed that there was no statistically significant difference in the mean perception scores of male and female English language teachers toward smart classroom technologies in Nsukka Education Zone. Although female teachers obtained a slightly higher mean perception score than their male counterparts, the difference was not statistically significant. This finding suggests that teachers' perceptions of smart classroom technologies are not influenced by gender. Rather, both male and female teachers recognize the importance of smart classroom technologies in improving instructional delivery and preparing students for future-ready learning. The similarity in perception may be attributed to the fact that both groups are exposed to comparable professional responsibilities, curriculum expectations, and the increasing emphasis on digital competence in teaching. The finding is consistent with Khan, Saeed, Anwar, and Kanwal (2023), who reported that gender, did not significantly influence teachers' perceptions and acceptance of educational technologies. The finding also supports the Technology Acceptance Model (Davis, 1989), which posits that technology adoption is primarily influenced by users' perceived usefulness and perceived ease of use rather than demographic characteristics such as gender. The implication is that programmes aimed at improving teachers' perception of smart classroom technologies should target all teachers irrespective of gender.

The study also found that there was no statistically significant difference in the mean utilization scores of male and female English language teachers regarding smart classroom technologies for instructional delivery in Nsukka Education Zone. Although female teachers reported a slightly higher utilization score than male teachers, the difference was not statistically significant. This finding indicates that both male and female teachers utilize smart classroom technologies to a similar extent in classroom instruction. The absence of gender differences suggests that the utilization of smart classroom technologies is more likely to be influenced by factors such as the availability of ICT facilities, internet connectivity, electricity supply, technical support, and teachers' professional development rather than by gender. This finding is consistent with Khan et al. (2023), who found no significant gender difference in the use of digital technologies for teaching and learning. It also aligns with the National Policy on Education (Federal Republic of Nigeria, 2024), which promotes equitable access to digital technologies and capacity building for all teachers without gender discrimination. The implication of this finding is that interventions designed to improve the utilization of smart classroom technologies should focus on addressing infrastructural deficiencies and enhancing teachers' digital competencies rather than developing separate technology programmes for male and female teachers.

Conclusion

The study investigated English language teachers' perception and utilization of smart classroom technologies for future-ready instruction in Nsukka Education Zone. The findings revealed that English language teachers generally have positive perceptions of smart classroom technologies and recognize their importance in enhancing students' engagement, interaction, motivation, communication, and creativity in English language instruction. The study also established that teachers utilize smart classroom technologies to a high extent, particularly through the use of multimedia presentations, instructional

videos, multimedia projectors, and digital learning materials; although the utilization of more advanced online learning platforms remains relatively low. Furthermore, the study identified inadequate ICT facilities, poor internet connectivity, unstable electricity supply, inadequate training opportunities, insufficient technical support, and limited access to digital resources as major challenges constraining the effective integration of smart classroom technologies into English language teaching. The study further revealed that gender did not significantly influence teachers' perception and utilization of smart classroom technologies.

Based on these findings, the study concludes that smart classroom technologies have considerable potential to promote effective and future-ready English language instruction in secondary schools. However, realizing this potential depends largely on the provision of adequate ICT infrastructure, continuous teacher professional development, reliable electricity and internet connectivity, and sustained institutional support. Addressing these challenges will enhance the effective integration of smart classroom technologies and better prepare learners with the digital competencies required for the twenty-first century.

Recommendations

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

1. The Enugu State Government, through the Post Primary Schools Management Board (PPSMB) and the Ministry of Education, should provide public secondary schools with adequate smart classroom facilities, including multimedia projectors, interactive boards, computers, internet-enabled devices, and other ICT resources to enhance English language instruction.
2. The Ministry of Education, PPSMB, and school administrators should organize regular in-service training, workshops, seminars, and professional development programmes to equip English language teachers with the digital competencies required for the effective integration of smart classroom technologies into classroom instruction.
3. School principals and administrators should create an enabling environment for technology integration by providing adequate technical support, encouraging teachers to adopt innovative instructional practices, and ensuring that available ICT facilities are properly maintained and utilized.
4. The Federal and Enugu State Governments, in collaboration with electricity providers and relevant ICT agencies, should improve electricity supply and ensure reliable internet connectivity in public secondary schools to facilitate the effective utilization of smart classroom technologies for future-ready instruction.
5. English language teachers should be encouraged by school administrators, PPSMB, and professional bodies such as the English Language Teachers' Association of Nigeria (ELTAN) to increase their use of advanced online learning platforms, such as Google Classroom, Microsoft Teams, and Zoom, to complement face-to-face instruction and promote interactive, collaborative, and learner-centred learning.
6. The Federal Ministry of Education, Enugu State Ministry of Education, Universal Basic Education Commission (UBEC) and development partners should subsidize the procurement of ICT facilities and digital learning resources and provide grants or special intervention funds to public secondary schools to improve access to smart classroom technologies and ensure their sustainable utilization for future-ready English language instruction.

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