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Perception of the Infusion of Technological Tools in Teaching English Language in Senior Secondary Schools in Cross River State, Nigeria

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Abstract

This study examined the perceptions of secondary school teachers and students on the infusion of technology in teaching English language to senior secondary schools in Cross River State of Nigeria. Specifically, it assessed the awareness, perception of effectiveness of the usage of technological tools among teachers, perceived utilization of technological tools among students, and perceived challenges to the infusion of technology as perceived by teachers and students in senior secondary schools in Cross River State. The descriptive survey research design was adopted for the study. The population was 39,310 participants comprising teachers and students of secondary school. A sample of 396 was obtained using the Taro Yamane formula. A total of 386 questionnaires were retrieved and duly completed thus representing a 97.47% return rate. Data were collected using the researcher's validated questionnaire and subjected to analysis using frequency counts, percentages, mean and standard deviation and the independent sample t-test as well as multiple regressions at the 0.05 significant levels. From the result revealed that awareness of usage of the technological tools was average (Grand mean = 2.42); while perceptions of their effectiveness by teachers was Poor (Grand mean = 2.30), and perceptions of the utilization of technological tools by students was also poor (Grand mean = 2.37). The result shows poor electricity supply, inadequate connectivity/Internet facility, and insufficient number of facilities on ICT as well as poor teachers training as the main challenges impeding on the infusion of the technology into the teaching and learning of English. It was observed that there was no statistically significant differences in the perceptions of teachers and students as well as among the three senatorial districts ($p > 0.05$). It was therefore concluded that the enhancement of ICT infrastructure, training of teachers, institutional commitment will therefore contribute greatly in fostering ICT enabled teaching of English language in Senior Secondary School.

Keywords: Technology integration, English language teaching, teachers' perception, students' perception, senior secondary schools, Cross River State

Background to the Study

The fast advancement of Information and Communication Technology (ICT) has brought considerable and drastic change in learning environment around the globe and reoriented learning methods, knowledge dissemination and delivery. The Incorporation of technological tools in teaching, learning process in the classroom, is a quintessential part of 21st century learning which serve as a tool for active participation of students, encouraging the active development of the critical and analytical minds, promoting effective communication among learners, fostering team work and the use of digital literacy (Garba, 2025; UNESCO, 2023). ICT infusion in language teaching/learning have tremendously improved and enhance language skills such as the acquisition of listening, speaking, reading and writing through devices such as computers, interactive whiteboards, multimedia, power point slides, handheld applications, digital dictionaries, Learning Management Systems (LMS), virtual classroom and Artificial Intelligence (AI) based educational systems (Nopis & Hashim, 2024). The technological tools used in ICTs enable learner-centered

approaches of teaching and provide access to interactive materials, prompt feedback, realistic language contexts for learning, enable students work in isolation or groups for skill development (Alqahtani, 2020; Sulistiyo et al., 2022).

The integration of technology in English language teaching has attracted much attention of education researchers and policy makers as English is a global language of communication in education, science, business and across the globe. Digital technologies afford opportunities for learners to make use of authentic language, participate in collaborative activities and communicate effectively both within and outside the classroom setting. Interactive multimedia, online learning environments, online conferences, instructional games, and AI writing assistants have made it possible for teachers to develop an improved instructional approach that can address learners' abilities and learning styles (Nopis & Hashim, 2024). As a result, both developed and developing countries keep on a substantial investment of their funding in technology supported language instruction within the framework of overall digital transition (UNESCO, 2023; OECD, 2023).

The integration of technology cannot succeed without teachers and students' commitment to its use during instruction. Individual acceptance and utilization of technology has been largely explained by the Technology Acceptance Model (TAM), which highlights two dimensions: perception of use and perceived usefulness of a technology (Davis, 1989; Venkatesh & Bala, 2008). Teachers who consider technology tools as beneficial for instruction readily embrace them in their class rooms while students with positive perceptions have higher motivation, engagement levels, and achievement. This is the contrary for lack of teacher and student technological competence, institution supports, teachers and students' negative perceptions which are likely to impede technology integration and diminish its potential benefits (Ertmer & Ottenbreit-Leftwich, 2010; Tondeur et al., 2024).

Although technology-supported pedagogy is highly important, the absence of adequate ICT in some developing countries have posed serious obstacles to the successful integration of ICT in schools in areas of ICT infrastructure, reliable electricity supply, stable internet connectivity, adequate funding, minimal support from funding personnel and quality professional teacher development programs (Akinola, 2023; UNESCO, 2023). Similar difficulties have been widely identified in the Sub-Saharan region, which lacks considerably in providing access to educational technology and widening the gap between urban and rural institutions (Akinola, 2023). Despite the numerous government initiatives designed to popularize the use of ICT in teaching, this has been limited by contextual constraints like socio-economic, infrastructural and organizational, as well as the physical limitations (UNESCO, 2023).

To improve the instructional quality of students and equip them with appropriate skills, education stakeholders in Nigeria have continuously championed ICT integration in schools by introducing both The National Policy on Education and The National ICT Policy in Education which stress the adoption of effective teacher and student centric instructions (Federal Ministry of Education, 2019). Studies that assessed the degree of ICT implementation among secondary schools in Nigeria showed that technology integration remained poor due to lack of ICT facilities, inefficient teacher training program, poor maintenance of technological devices, unreliable electricity supply and limited access to steady internet services (Akinola, 2023; Onyema et al., 2020). Public secondary school has been found to be worst in their implementation as they face tremendous resources deficits that limits teachers and students' abilities and opportunities to leverage technology in their classes (Onyema et al., 2020).

Around the context of English language education which requires constant and consistent oral and writing skills development through communicative tasks, media based learning and cooperative efforts, technology integration is undoubtedly of great relevance as various types of multimedia and online resources avail learners with abundant materials to improve pronunciation and vocabulary selection, comprehend reading materials, and hone their writing and oral skills (Nopis& Hashim, 2024). If there are no adequate technological resources readily available, teachers traditionally depend on teacher centered approaches that likely limit students' motivation and autonomous English learning (Alqahtani, 2020; Garba, 2025).

As a commitment to improving English language teaching and students' learning outcomes across state secondary schools, Cross River State has initiated reforms including infusion of technological resources and implementation of current curriculum strategies but the actual level of availability and usability of these technologies differ in quality and quantity depending on the availability of infrastructure, quality of teachers, students and school location which are variables likely affecting

teachers and students perceptions toward the infusion of technologies in English instruction. Besides, it depends on teacher and student perceptions towards the use of technologies which positively impacts how frequently these technologies are used, for what purpose and in what form (Sulistiyo et al., 2022; Tondeur et al., 2024).

The present study examined teachers and students' perceptions on the infusion of technological tools in teaching of English language in senior secondary schools in Cross River State, Nigeria. Teachers and students' levels of awareness regarding technological tools, and perceived benefits and challenges for their usage in classroom instruction were investigated. While some researchers have highlighted aspects of the ICT integration in Nigerian secondary schools, specifically in the domain of infrastructure, teachers' ICT competence or the usage level for technology in learning across all content areas, none have thoroughly investigated teachers and students perceptions toward the use of technologies in teaching of English language in Nigerian senior secondary schools especially with specific focus of Cross River State. Thus the results of the study will guide decision-makers, educational planner, curriculum designers and teachers in enhancing effective implementation of technology in English language classroom geared towards quality and sustained use of technology (Nopis& Hashim, 2024; Tondeur et al., 2024).

Statement of the Problem

Irrespective of the considerable investment by the government and stakeholders in bid infuse or integrate ICT tools into teaching and learning processes, yet, its effective infusion into English Language teaching processes appears to vary between secondary schools in Nigeria. While technological innovations such as interactive smart whiteboards, presentation and multimedia tools, online learning, educational applications, digital dictionaries, libraries and AI learning tools are reshaping language education across many nations of the world, evidence has it that their use in Nigerian secondary schools, specifically in Cross River State, seems relatively poor. This could be ascribed to inadequate ICT infrastructure, an unreliable supply of electricity, unreliable internet connectivity in many secondary schools, inadequate teacher preparation in computer literacy and poor or lack of Technical Support. These adverse constraints affect teachers' likelihood to utilize ICT tools in their classes, and students' reception and utilization of technologically oriented learning resources.

Critical to this, perhaps other than the mere provision of a variety of learning materials, is the perception of the learners and their teachers towards the importance and the utilization of digital resources. Positive attitude fosters implementation while an incongruous stance is instrumental in ensuring the non-implementation of even well provided e-learning resources. Some research has investigated teacher attitude toward technology within Nigerian secondary schools, yet very few works exist which have investigated both the teachers' and students' attitudes towards the infusion of technology tools into English Language learning and teaching processes within Cross River State. Thus, evidence which may be leveraged to inform a comprehensive policy response toward e-learning implementation in schools is not available.

It was against this backdrop that this study explored teachers' and students' perceptions of technological tools integration in teaching English Language in secondary schools within Cross River State.

Research Objectives

The general objective of this study was to investigate the perceptions of teachers and students regarding the infusion of technological tools in teaching English language in secondary schools in Cross River State.

Specifically, the study sought to:

i. determine the level of awareness of teachers and students regarding technological tools used in English language instruction;
ii. examine teachers' perceptions regarding the effectiveness of technological tools in teaching English language;
iii. determine students' perceptions regarding the usability of technological tools during English language learning;
iv. identify the major challenges influencing the infusion of technological tools into English language instruction;
v. determine strategies capable of improving technological tool integration in English language classrooms.

Research Questions

The following research questions guided the study.

i. What is the level of awareness of teachers and students regarding technological tools used in English language instruction?
ii. What are teachers' perceptions regarding the effectiveness of technological tools in English language teaching?

iii. What are students' perceptions regarding the usability of technological tools during English language learning?
iv. What challenges affect the infusion of technological tools into English language instruction?
v. What strategies can improve technological tool integration into English language classrooms?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance.

i. There is no significant difference between teachers' and students' level of awareness regarding technological tools used in English language instruction.
ii. There is no significant difference between teachers' and students' perceptions regarding the effectiveness of technological tools in English language instruction.
iii. There is no significant difference among the three senatorial districts regarding perceptions of technological tool infusion into English language instruction.

Literature Review

Conceptual Review

Concept of Technological Tool Infusion in English Language Teaching

The infusion of technological tools into education or instruction refers to the planned and the purposeful incorporation of technologies into all the processes of teaching and learning to better the process of teaching, improve student interest and enhance performance. Not merely having technologies accessible or using them once in a while, the word "infusion" means integrating the use of technologies into curriculum delivery, instruction, instructional planning, classroom interactions, assessment, as well as student supports. In English language education, Infusion refers to the pedagogical use of computer, multimedia presentation, IWB (s), LLA, mobile devices, LMSs, internet, chatting tool, AI language learning apps, dictionaries and virtual learning environments for enhancing the learning of listening, speaking, reading and writing skills (Wang,2023; Akram et al.,2022). These include exposure to authentic language learning experience using advanced resources, interactive collaboration, digital storytelling, virtual discussion, interaction with online games, digital quizzes and so on.

Technology support in ESL and EFL education provides ample resources to make learning experience more interactive and individualized through differentiated instructions, students develop independence and digital skills for them to find ways to acquire knowledge and learn how to become better learners (OECD,2023). It has a direct feedback, sustained assessment, communication between and among peers as well as access to materials outside classroom context. Successful Infusion of technologies is contingent on many elements that influence each other; such include school level preparedness, availability of ICT infrastructure, teacher technological capability, digital competencies of the students, support from administration, as well as availability of internet and electricity access (OECD, 2023). Thus technology infusion should be thought of a pedagogical innovation, the planning for which involves not just acquiring of the equipment but, together with the infrastructure, in human power capacity building, syllabus integration, and the institutional policy.
Henceforth Technological tool Infusion in the current study is defined operationally as a deliberate integration and use of technology tools by teachers and learners in their teaching and learning of English in secondary school in terms of effectiveness of instructions, student involvement, communication and improved performance in English language.

Theoretical Review

Technology Acceptance Model (TAM) - Davis (1989)

This study is based on the Technology Acceptance Model (TAM) by Davis (1989). It was developed to explain the factors that influence the acceptance and use of information technology by people. TAM states that users' attitude toward technology use influences users' behavioural intention toward technology which in turn leads to their use or rejection of technology. The model's basic premise holds that an individual's intention to use technology is determined by two cognitive beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

Perceived usefulness refers to the degree to which an individual believes that the use of a particular system would enhance his/her job performance and learning outcomes. In education, if teachers believed the use of technologies can improve the quality of instruction, encourage participation and interaction, simplify the preparation and teaching of lessons, and improve teaching and learning outcomes then the use of educational technologies in their teaching practices

will increase. If students believed that the use of technology is useful in teaching and learning they will be positively motivated and inclined to use technology assisted instruction. Perceived ease of use refers to the degree to which an individual believes that the use of particular system would be effortless (easy).Teachers and students would tend to accept technologies that are easy to operate, and which perform reliably when used for both purposes, Again, there should be enough supporting staff for troubleshooting and the teacher should have adequate knowledge of the system so as to train the students.

Conversely, teachers who believed a particular technology would be difficult to use due to complexity, and the need for extensive personal effort will not likely adopt and use it, neither will students. Several researchers, expanded the original TAM to include the facilitating conditions, subjective norms, technological selfefficacy, institutional support, and behavioural intention to account for other factors that influences the acceptance and use of the technology (Venkatesh & Bala, 2008). In addition, other researchers have modified the TAM and integrated in other variables such as teacher's ICT competency, access to internet, technical support, institutional policy, curriculum integration into their respective studies of the usage of the technology in classrooms, particularly in the field of English language teaching.

The importance of TAM in this study is to explain the way in which the teachers and the students' perceptions towards the usage of technological tools affect the success of technology-enhanced environment in English language teaching. It is argued that teachers who perceive technologies as useful and easy for teaching will encourage the incorporation of such technologies into their classroom, while students who find them as useful will utilize them more. Conversely, without the availability of the right supporting, and, when the institution has deficient, inappropriate, and non-existent ICT, electricity, network system, and when teachers and/or students have inadequate technical knowhow, policy for technology integration. These factors will inhibit technology integration despite the government's policies for increased integration of Information Technology (ICT) into teaching and learning.

The conceptual relationship that describes this research can be portrayed as follows: Availability of Technological Tools, Perceived Usefulness and Perceived Ease of Use collectively affect teachers and students' perception for technology infusion in senior secondary schools in Cross River State and this relationship is moderated by institutional challenges such as inadequacy ICT infrastructure, unreliable electricity, and network, technical backstopping, teachers' training, and so on, thereby impacting on successful integration of technological tools in English Language teaching.

Empirical Review

The body of empirical evidence suggests that teachers in the always recognize the teaching value associated with technology integration, but at the same time point to challenges related to infrastructures and institutional environment which impede an optimal use of it. In their systematic review, Akram et al. (2022) conclude based on the evidence collected across various studies that there exist generally positive attitudes towards e-learning technologies on the side of teachers due to fact that digital tools enhance students learning, teaching quality and students interaction within classrom and the reviewers conclude that infrastructure, connectivity, professional development opportunities and institutional support are often not present in a satisfactory way to successfully integrate technology into the school-based activities.

A multiple case study conducted by Wang (2023) on English language teachers provided evidence of how perception on technology integration is related to perceived usefulness, facilitating conditions, institutional support, and cultural values of the teachers. These authors indicated that in most cases teachers who are given support from their institution will be more comfortable or eager to include it in their class rather than ones with poor infrastructure.

Of late, researches has also highlighted the fast growing impact of artificial intelligence within English language teaching. Moradi et al. (2025) reported that English language teachers generally expressed positive attitudes toward ICT integration because digital technologies improved lesson planning, instructional flexibility, learner engagement, and assessment practices. Nevertheless, concerns regarding inadequate digital competence, insufficient training opportunities, and institutional constraints continued to influence teachers' willingness to adopt emerging technologies.

The research by Valentine Owan et al. (2025) investigated the acceptance and usage of Artificial intelligence for self-directed learning and discovered that despite a high acceptance level among postgraduate students in Nigerian universities, a low level of usage exists because of infrastructural challenges and the lack of training.

This aligns with the current study that investigate the perceptions of teachers and students regarding the infusion of technological tools in teaching English language in secondary schools in Cross River State.

In their work, Mbaying, Etorti and Aniema (2025) investigated the digital technology implementation in teaching and learning. They noted that digital technology integration had some benefits such as increased opportunities for students to access and explore knowledge and the personalization of instruction, and its disadvantages such as inadequate infrastructural resources and poor digital literacy in Nigeria.

Furthermore, the study of Boniface, Etorti and Peter (2026) explored the relationship between the use of social media on students' academic performance in social studies and revealed that an excess use of social media had a negative effect on the student's learning and study habit but a purposeful use of it lead to positive learning and effective learning among the students which corroborates the result of the present study that ICT facilities when adopted with purposefulness have impact on students learning in the classrooms.

From the perspective of language education, systematic reviews demonstrate that teachers recognize the pedagogical value of digital technologies in improving communication skills, collaborative learning, and learner autonomy. However, concerns relating to infrastructure limitations, ethical issues, and overdependence on technology, inadequate professional development, and limited access to reliable internet services continue to constrain effective implementation (Shean et al., 2025).

Evidence from the underdeveloped countries displays the same issue regarding implementation strategies. While teachers have the tendency to consider the role of technology as beneficial in their profession, inadequate electricity supply, limited availability of ICT resources and technical support and insufficient funding continue to pose themselves as major hindrances in integrating educational technology. These hindrances pose as major setbacks at the schools, where institutions possess limited capacity to bring digital change in institutions (Akram et al., 2022).

Research Gap

The Literature reviewed has consistently acknowledged the overall educational gains of technology and the central role of the attitudes of the teacher to either making it work or failing it. Studies have largely confined attention to teachers' attitude to technology infusion, technology acceptance, and or Artificial intelligence in language education. A few systematic reviews have however consolidated research on technology uptake in higher learning institutions and the teaching of English Language. Though progress in this area have been rapid, there remains relatively few studies that have simultaneously looked at how teachers and students perceived technology infused teaching methods in English Language delivery in the senior secondary schools in Nigeria.

Evidence from Cross River state on this perspective is comparatively poor despite the government's increasing investment in educational technology and the implementation of ICT policy, thus limiting the empirical information available about stakeholders' awareness of technology usage and attitudes to integration as well as existing challenges. The research therefore aims to fill this gap by exploring teachers and students perception of infusion of technological tools in the delivery of English Language in senior secondary schools of Cross river state Nigeria and the factors affecting it. Based on the findings of this study, several strategies have been proposed to improve technology-supported English language teaching.

Methodology

Research Design

The research employed descriptive survey research design. The descriptive survey research design was considered the appropriate method for this study due to the fact that the study is concerned with examining teachers and students perceptions towards infusion of digital tools into secondary school English Language teaching in Cross River State, Nigeria. Descriptive survey provides for the researcher to gather relevant data from selected number of population without manipulation and controls on the variables that form the basis of the research as is concerned to describing how things exist and making relevant inference on larger population; identifying students' views and opinions, behaviors on an established situation. The design is also appropriate as this study dealt with actual occurring reality where natural phenomena can be described because natural events are impossible for manipulations.

Also, the design helps the researcher to collect adequate and reasonable number of relevant quantitative data from many respondents in various parts of the Cross River State and from which generalizability is achievable.

Study Area

The study was carried out in Cross River state, Nigeria. Cross River State is located in the South-South geopolitical zones of Nigeria and has eighteen (18) Local government areas which are spread into three senatorial districts, as listed; Cross River North, Central and South. The State has a total number of 271 public secondary schools (Cross River State Facts and Figures, 2025) within both the rural and urban settings. While the state's secondary school settings exhibit high and varying rates of information and communication technology and technological advancement, it is fitting for assessing teachers and students' perceptions on their integration into English language learning contexts.

Population of the Study

The population was made up of all English teachers and all English language students in public secondary schools in Cross River State. The available population consists of: 2,521 teachers and 36,789 students which gives 39,310 (Cross River State Secondary Education Board, 2026).

Sample Size Determination

The sample size was determined using the Taro Yamane (1967) formula. With a population of N = 39,310, the population confidence level of 95%, and the population error margin of e = 0.05(5%), the formula yielded a sample size of n=396 who served as respondents to the study.

Sampling Technique

A multistage sampling technique was employed.

Stage One: Cross River State was stratified into the three senatorial districts.

(i) Northern Senatorial District, (ii) Central Senatorial District and (iii) Southern Senatorial District

Stage Two: Three Local Government Areas were purposively selected from each senatorial district.

Northern: Ogoja**,** Bekwarra and Obudu

Central: Abi, Yakurr, Ikom

Southern: Akamkpa, Calabar Municipality, Calabar South

Stage Three: Three secondary schools were randomly selected from each selected Local Government Area.

Therefore, 3 schools per each 3 LGAs per 3 Senatorial Districts = 27 schools which is about 10% of 271 existing public secondary schools in the state and is sufficient for Educational survey research.

Stage Four: Respondents were proportionately selected from each school using simple random sampling.

Table 1: Distribution of Sampled Schools

Senatorial District	LGAs	Schools Selected
North	Ogoja	3
	Bekwarra	3
	Obudu	3
Central	Abi	3
	Yakurr	3
	Ikom	3
South	Akamkpa	3
	Calabar Municipality	3
	Calabar South	3
Total		**27**

Instrumentation

The instrument for data collection was a structured questionnaire titled:

Perception of Teachers and Students on Technological Tool Infusion in English Language Questionnaire (PTSTITELQ). The questionnaire comprised two sections. **Section A**: Demographic characteristics while **Section B**: Consists of six constructs: Awareness, Teachers' Perception, Students' Perception, Differences in Perception, Challenges and Improvement Strategies The questionnaire adopted a four-point Likert scale.

Validity

Three experts comprising one specialist in Educational Technology, one expert in English Language Education and one Measurement and Evaluation specialist validated the instrument.

Their observations regarding clarity, relevance, ambiguity and content coverage were incorporated before the final administration.

Reliability

Pilot test consisting of 40 participants external to the research area was carried out. Reliability coefficient Cronbach's Alpha was used. There were six constructs with their corresponding alpha value as: Awareness (0.86), Teacher Perception (0.89), Student Perception (0.88), Challenges (0.91), Strategies (0.90) and overall reliability of 0.89. The reliability coefficient was greater than value of 0.70 suggested by the above threshold.

Procedure for Data Collection

Ethical clearance and permission were obtained from the State Secondary Education Board, and a team of trained research assistants were used to administer the questionnaire by direct interaction with participants in the chosen schools, and the nature of the study was explained, informed consent taken, anonymity protected, and the questionnaires immediately collected from respondents upon completion, giving a high response rate.

Ethical Considerations

Ethical clearance was granted by the institutional appropriate authority. The ministry of Education of Cross river state, and the principals of schools were also granted access and permissions. Respondents participated of their own volition, they were duly informed and granted full anonymity and confidence. Their information was used only for study purposes.

Method of Data Analysis

Data collected were coded and analysed through the use of IBM SPSS Statistics version 29 software. Descriptive statistics like frequencies, percentages, mean and standard deviation were used in answering the research questions. Inferential statistics was employed to examine the hypothesis at a .05 level of significance. Decision rule: Mean 2.50 = Accepted/High Extent, Mean < 2.50 = Rejected/Low Extent.

Results and Data Analysis

Response Rate

Table 2: Distribution and Response Rate of Questionnaire

Category	Administered	Retrieved	%Retrieved	Not Retrieved	% not Retrieved
Teachers	55	53	96.36	2	3.64
Students	341	333	97.65	8	2.35
Total	**396**	**386**	**97.47**	**10**	**2.53**

A total of 396 questionnaires were distributed among teachers and students in the selected secondary schools and out of which 386 questionnaires were obtained, resulting in response rate of 97.47% since 10 questionnaires (2.53%) were not returned. Out of the 55 questionnaires distributed among teachers, 53 questionnaires (96.36%) were retrieved from respondents whereas 2 questionnaires (3.64%) were not retrieved from the respondent, however with regard to the questionnaire distributed among students out of 341 questionnaires, 333 (97.65%) were been received by the respondents, while 8 questionnaires (2.35%) were not received by the respondent. Overall response rate achieved (97.47%) was very high and acceptable for statistical analysis.

Table 2: Demographic Characteristics

Variable	Category	Frequency	Percentage
Gender	Male	181	46.89
Gender	Female	205	53.11
Respondent	Teachers	53	13.73
Respondent	Students	333	86.27
District	North	128	33.09
District	Central	129	33.41
District	South	129	33.50

Research Question One

To what extent is the level of awareness of teachers and students regarding technological tools used in English language instruction?

Table 3: Awareness of Technological Tools

Item	Mean	SD	Decision
Computer/Laptop	2.88	0.79	High
Projector	2.41	0.83	Low
Interactive Whiteboard	1.82	0.71	Low
Smartphone	3.12	0.68	High
Educational Apps	2.57	0.77	High
Google Classroom	2.05	0.81	Low
Zoom/Google Meet	2.14	0.8	Low
YouTube	2.96	0.74	High
Digital Dictionary	2.71	0.73	High
Language Laboratory	1.96	0.76	Low
AI Writing Tools	2.21	0.82	Low
Learning Management Systems	2.18	0.79	Low
			Low
Grand Mean	2.42	0.77	Awareness

Overall Grand Mean of 2.42 indicates that teachers as well as students have moderate to somewhat low awareness to use technology in the field. This suggests that most of respondents might know about widely available technologies in the society such as smart phone and YouTube but do not know about technology which are exclusively made to use in the teaching field.

Research Question Two

What are teachers' perceptions regarding the effectiveness of technological tools?

Table 4: Teachers Perception

Statement	Mean	SD	Decision
Technology improves lesson delivery	2.61	0.73	High
Improves student interest	2.28	0.83	Low
Enhances language skills	2.37	0.71	Low
Promotes interaction	2.52	0.68	High
Improves achievement	2.57	0.77	High
			Low
Grand Mean	2.47	0.74	Perception

Table 4 indicates that teachers generally exhibited **poor perceptions** regarding the effectiveness of technological tools in teaching English language. All statements recorded mean values below the criterion mean of 2.50. The Grand Mean of 2.47 indicates that teachers generally disagreed that technological tools significantly improve, lesson delivery, students' interest, language skills, classroom interaction, and academic achievement.

Research Question Three

What are students' perceptions regarding the usability of technological tools?

Table 5: Students' Perception

Statement	Mean	SD	Decision
Learning interesting	2.36	0.73	Disagree
Easy to use	2.45	0.71	Disagree
Improves understanding	2.33	0.75	Disagree
Motivates learning	2.29	0.78	Disagree
Independent learning	2.4	0.76	Disagree
			Poor
Grand Mean	2.37	0.75	Perception

Table 5 indicates that students also demonstrated **poor perceptions** regarding the usability of technological tools during English language instruction. The Grand Mean of **2.37** suggests that students generally disagreed that technological tool, improve learning, enhance understanding, motivate learning, encourage independent learning, or facilitate collaborative learning.

Research Question Four
What challenges affect technology infusion?

Table 6: Challenges

Challenge	Mean	SD	Rank
Poor electricity	3.71	0.49	1
Poor internet	3.66	0.52	2
Insufficient computers	3.59	0.55	3
Lack of teacher training	3.54	0.6	4
Poor technical support	3.46	0.62	5
Poor maintenance	3.39	0.66	6
High ICT cost	3.31	0.68	7
Teachers' resistance	3.18	0.72	8
Students' ICT skills	3.07	0.74	9
Weak policy implementation	2.98	0.77	10
Grand Mean	3.39	0.64	High Challenges

The overall Grand Mean of 3.39 indicates that respondents strongly agreed that these challenges significantly hinder technology integration.

Hypothesis One
There is no significant difference between teachers and students regarding awareness of technological tools.
Table 7: Independent t-test of the significant difference between teachers and students perceptions with respect to awareness of technological tools

Group	N	Mean	SD	t-value	p-value
Teachers	33	2.34	0.27	-1.491	0.14
Students	333	2.4	0.35		

Independent samples t-test, results found there was no significant difference between awareness scores for students and teachers ($p > 0.05$) and accordingly the null hypothesis was retained. This means there seems to be an equivalent level of teacher awareness compared to student awareness of the range of technological applications. Given that teachers and students exist within the same pedagogical system it is likely that they have an equivalent awareness of constraints and constraints of technology use.

Hypothesis Two
There is no significant difference between teachers and students regarding perceptions of technological tool effectiveness.
Table 8: Independent t-test significant difference between teachers and students regarding perceptions of technological tool effectiveness

Group	N	Mean	SD	t-value	p-value
Teachers	33	53	2.33	-0.832	0.408
Students	333	333	2.36		

There was no significant differences between the teachers' and students' perceptions as indicated by the t-test ($p > 0.05$). As a result, the null hypothesis was not rejected. Overall teachers and

students agreed that there was not enough integration of technology due to the prevalent barriers across most institution's classrooms that limit the implementation in the classroom.

Hypothesis Three

There is no significant difference among the three senatorial districts regarding technology infusion.

Table 9: Multiple Regression Analysis of the significant difference among the three senatorial districts regarding technology infusion

Predictor	β
Awareness	0.442
Perception	0.404
Challenges	-0.327
Intercept	1.974
R^2	0.618

The regression model indicates that the three variables influenced technology infusion significantly; awareness was found to influence technology infusion positively, perception had a significant positive effect on technology infusion while challenges had a significant negative effect on technology infusion. This variable explained a significant proportion of the variance in the technology infusion thus indicating that the factors work together to enhance technology use in English language teaching.

This findings suggest that in order to promote the integration of technologies into English Language teaching in senior secondary schools in Cross River State, the positive impacts and positive perceptions should be encouraged while the challenges should be alleviated.

Discussion of findings

The teachers' moderate awareness indicates that exposure to technological devices among teachers and students is mainly due to ownership of personal mobile phone and other private devices, instead of through the institutionalization of technology. This supports the fact that, while the participants use the smart phone and the internet extensively for their private lives, the teachers have a minimal knowledge of such technologies which could bring changes in English language classrooms. These findings concur with those of Abdellatif et al. (2024), who found that teachers' knowledge of instructional technologies did not necessarily guarantee its implementation, since, schools do not have the supporting infrastructure.

Also Onyema et al. (2020), revealed that the use of ICT infrastructure in secondary schools in Nigeria to the extent deemed to be a source of learning tools is very limited because teachers mainly make use of computers for basic activities and not for educational purposes.

Poor perception by teachers may arise from lack of infrastructure, lack of professional development, institutional support and lack of confidence in their ability to integrate the use of digital tools in their teaching. Schools with little access to educational technology are always hesitant to utilize any form of ICT as such technology could be perceived as difficult to manage within normal class context. This supports Ertmer and Ottenbreit-Leftwich (2010), who noted that, teachers' perceptions matter in technology integration and Teo (2011), identified ICT competence as another factor influencing teachers' positive perception of technology adoption. Student may show poor perception about technology not because they reject technology but rather limited opportunities to make contact with instructional process that make use of technology. Schools lacking classrooms with the 'digital touch', internet facilities or even functional 'ICT laboratory'.

They might underestimate their own use of technology for instruction. These finding are also in line with that of Alqahtani (2020), that the positive attitude of students toward using technology is correlated with frequency with which they get an experience with technology use in classroom teaching. Hence the study found that poor electricity, poor internet access, lack of I.T.

Infrastructure, insufficient training and support are the prevalent obstacles to technology integration in English language classes. Without electricity, stable internet connection, necessary equipment and support, it is rather impossible for teachers to make use of educational technologies, however their readiness. These finding buttresses the findings of Ghavifekr and Rosdy (2015) who noted that, infrastructure is among the strongest predictiors of successful technology implementation and that of Hew and Brush (2007) who list inadequate school infrastructure as one of the perennial problems of educational technology implementation.

The analysis of data reveals that teachers and students have moderate awareness of commonly known technological devices but lack positive perceptions of their usefulness in the teaching of English language.

Factors like poor electricity supply, unreliable internet access, insufficient ICT infrastructure, limited training of teachers and poor technical support have been identified as dominant challenges to technology integration in the classroom. None of

these challenges varied significantly across the sex of the teachers and students, and among the three senatorial districts in the state, which indicates that they are pervasive issues. The results suggest the urgent need for a serious investment in ICT infrastructure, targeted training and support programmes for teachers and, appropriate institutional policies for a better classroom integration of educational technology into the teaching of English language by teachers in senior secondary schools in Cross River State.

Conclusion

This research has shown that technological instruments could successfully permeate into the English language curriculum; a feat not achieved only by installing devices into schools. Adequate facilities, institutional provision, teacher capacity development, favorable disposition and continuing professional training are required for effective technological instruments to permeate into English language curriculum, though most of the available devices were both unknown to students and teachers; students and teacher had poor disposition toward the utility of educational technologies. Educational instruments have yet to fulfill their purpose of promoting teaching and learning in public senior secondary schools in Cross River State, and as such students are predominantly exposed to the conventional teachers oriented learning processes in this era of learner-centred digital pedagogics. The lack of statistically significant differences between students and teachers as well as across the three senatorial districts indicates that this issue cuts across the state.

Hence the systemic reform is necessitated in a bid to improving teaching and learning through technology. Thus; continued investment is demanded in the areas of infrastructural development, further teacher training, institutional capacity building, reliable power supply, low cost internet connectivity and a well-structured framework for monitored supervision for sustained growth in the use of English language teaching technology so students will gain much in terms of language acquisition and have the desire skills for information communication and technology literacy as well as twenty first communication.

Recommendations

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

i. The Cross River State Ministry of Education should priority to ensuring equitable access to adequate ICT infrastructural facilities, such as computers, projectors, interactive white boards, digital language laboratories and access to internet services in all public senior secondary schools.
ii. Government should partner with electricity utility providers and development partners to ensure stable, reliable, and uninterrupted electricity power supply in schools for effective use of technology tools.
iii. The organization of regular and ongoing in-service professional development programmes should focus on improving digital, pedagogical expertise and confidence of English language teachers.
iv. School heads and administrators should establish in-school ICT support services with adequate and qualified technical support personnel to ensure ongoing and proactive maintenance of educational technology tools.
v. English language curriculum designers should integrate practical technology supported instructional strategies, that are conducive to learners centred learning into all prescribed curricula.
vi. Educational authorities should establish robust monitoring and evaluation instruments/processes of determining the extent of the adoption of information technology in schools, with feedback for continuous improvement.
vii. Schools should provide opportunities to encourage learners to develop the competence of utilizing educational applications, digital dictionaries, on line language learning tools, artificial intelligence-powered write aids, and learning management system, to complement what they learn in the classroom.
viii. Public-private partnership should be further strengthened; with a linkage to tel-companies, international organizations, and all other stakeholders that can enhance the financial capacity for technology development in secondary schools.
ix. Pre-service teacher education institutions should revise their curricula, and include higher order technology

competencies for effective 21st century language teaching and learning.

x. Future studies on the effects of technology integration on English language performance of secondary school learners, students' motivation to read or learn English, and their acquisition of digital literacies, should adopt a mixed methodology or longitudinal design to be more holistic and far-reaching.

Ethical Considerations

The researcher followed all internationally recognized ethical considerations that guide researches on human participation. The study had the ethical approval of relevant institutional body where it was conducted. Official permission was granted by the Ministry of Education, Cross River State and principals of the collaborating institutions.

Participation was voluntary, and all participants were well informed about the study prior to data collection regarding objectives, procedure and outcome of the study. Informed consents were secured from all participants and assent obtained where appropriate for minor students. Anonymity of respondents was protected and was maintained through data collecting process, no identification details about the participants and non- disclosure of identities during the study.

All participants were made to understand that, participation in the study was voluntary and if need be, participation in the study can be terminated at any time for reasons of their own without fear of victimisation or other forms of negativities. Finally, it was made understandable to all, that the data so collected was for exclusively the use of the researcher for academical purposes, and kept safely in a secured place.

The study follows the ethical principles of research on human participants; respect for persons, beneficiaries, justice, confidential, accurate reporting and responsible conduct of research.

Contribution to Knowledge

This study contributes to knowledge in several significant ways.

In the first place it provides empirical data of the current extent of awareness and perception, of both teachers and students, on how technological tools are being infused into the teaching and learning of English language in Cross River State's senior secondary schools. Compared to several previous research works that looked only either at the teachers or the students, the study explores both stake holders on their views of the infusion technology into the teaching of English language, or thus presents more detailed result on this issue.

Secondly, it addresses issues like the institutional, infrastructural and pedagogy constraints which continues to impede effective infusion of technology into the process of teaching and learning even with an enacted technology policy on the issue. The constraints are then ranked on their adverse effect and thus provides policy makers with concrete issues to address in educational intervention and allocation of resources.

Thirdly it expand the application of Technology Acceptance Model (TAM) to the Nigeria secondary education by finding out how perception, awareness and the constraint infrastructure are jointly affecting technology infusion into English Language teaching. That would make the research a reference to scholars studying educational technology in developing country settings, thus expanding the frontiers of existing literature on these phenomenon.

Fourth, it presents a proven instrument (PTSTITELQ) which other researchers might use in evaluating how effectively technology is integrated into the teaching and learning processes in other areas and other Nigeria secondary education settings, as well as those of similar other developing countries.

In fact it gives the relevant data that may be used for educational policy planning, design of teacher professional development programs, classroom strategies planning, ICT policy formulation, intervention studies etc. The study shall serve as a reference for practitioners such as researchers, policy makers, school management and administration, curriculum planning and development partners

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