LEVERAGING TECHNOLOGY INNOVATION TO FOSTER INCLUSIVITY IN ENGLISH LANGUAGE CLASSROOM IN NSUKKA EDUCATION ZONE, ENUGU STATE

Rosemary Chidimma Ossai; Esther Ngozi Oluikpe & Amuche P. Nnamani Department of Arts Education Faculty of Education, University of Nigeria, Nsukka

Abstract

This study focused on leveraging technology innovation to foster inclusivity in English language classroom in Nsukka Education Zone, Enugu State. Descriptive survey design was adopted for the study. The population of the study was 122 English language teachers in the 62 government-owned secondary schools in the area of the study, and all of them were used for the study. Data were collected using a questionnaire. Cronbach Alpha was used to determine the reliability of the instrument, and the reliability index of 0.87 was obtained. Mean and standard deviations were used to analyze the data. Findings revealed that teachers hold positive perceptions of technology innovation in promoting inclusivity; and that specific technology-based strategies, such as online collaboration tools and multimedia resources, were identified as effective in supporting diverse learners. Findings also show that technology-facilitated collaboration tools enhance peer-to-peer interactions among students by promoting peer-to-peer communication and feedback in the learning process. Based on the findings of this study, it is recommended that Ministry of Education should establish programmes to enable English language teachers acquire the knowledge and skills needed to adopt technology innovation so as to foster inclusivity in English language classrooms.

Keywords: Technology, innovation, inclusivity, English language

Introduction

The knowledge of the English language is essential for senior secondary school students in Nigeria, as it serves as a gateway to academic and professional opportunities (Ogunsanwo, 2019). However, students in inclusive classrooms often face significant challenges in learning English language, including difficulties with comprehension, communication, and cultural relevance (Afolayan, 2020). This situation is a pressing concern that warrants urgent attention. In order to address these challenges, this study investigates how technology innovation can be leveraged to improve the learning experiences and outcomes of senior secondary school students in inclusive English language classrooms, with a focus on exploring teachers' perceptions, identifying effective technology-based strategies, and examining the impact of technology-facilitated collaboration tools on students' interactions in inclusive English language classrooms. English is a language that facilitates communication across different cultures and disciplines. According to Afolayan (2020), English is a vital tool for global communication, education, science, technology, and international relations. Furthermore, Adeyemi (2022) views English language as a basic subject that equips learners with essential skills for academic, professional, and social success; and emphasizes that mastering English language is essential for students' career prospects and opportunities for higher education. Proficiency in English language is essential for students to access a wide range of texts, including literary works, academic materials, and online resources. In today's globalized world, proficiency in English language is a highly valued skill in the job market.

The English language is a fundamental subject taught in Nigerian secondary schools, encompassing various aspects that enable students to communicate effectively and comprehend written and spoken texts. The aspects of English language taught in Nigerian secondary schools include grammar, vocabulary, essay writing, oral English, summary writing and comprehension (Ogunsanwo, 2019). Grammar focuses on the rules governing sentence structure, verb tenses, clauses, and phrases. Vocabulary expansion is also a crucial aspect, as students learn new words, their meanings, and usage. In essay writing, learners are taught to express thoughts and ideas through extensive writing. Oral English involves the study of sounds, intonation patterns, and sound combinations of the English language, while summary writing and comprehension equip English language learners with skills in reading, understanding and summarizing reading texts. The knowledge of the various aspects of English language equips students for effective communication in academic and professional settings (Hwang, 2022). Therefore, it is imperative for students to master the various aspects of English language to succeed in their academic and professional pursuits.

Despite the importance of mastering the English language, students encounter various problems when learning each aspect. For instance, students often struggle with phonetic transcription and pronunciation (Adegbite, 2018). Grammatical rules and sentence structure are also challenging for students to grasp (Ogunsanwo, 2019). Vocabulary expansion is also be a daunting task, as learners need to learn new words, their meanings, and usage, which can be time-consuming and overwhelming (Afolayan, 2020). These problems that learners encounter in learning the various aspects of the English language in secondary schools can be attributed to the practice of inclusive education. Inclusive education is an educational approach that brings together learners with special needs, learners with different ability levels, and those from different backgrounds in the same classroom (Alghamdi, 2020). This approach aims to provide equal opportunities for all learners to access quality education, regardless of their abilities or backgrounds. In an inclusive English language classroom, learners with different ability levels may require different teaching approaches, which can be challenging for teachers to manage in an inclusive classroom (Afolavan, 2020). Furthermore, learners from different backgrounds may bring different cultural and linguistic experiences to the classroom, which can affect their understanding and use of English language (Kukulska-Hulme, 2020). Moreover, learners with special needs, such as visual or hearing impairments, may face challenges in accessing the learning materials (Adevemi, 2022). For instance, learners with visual impairments may struggle to read and write, while those with hearing impairments may find it difficult to follow instructions or participate in class discussions (Adedimeji, 2022).

The challenges posed by inclusive education in the English language classroom can lead to poor learning outcomes for learners. According to Hwang (2022), learners in inclusive classrooms may experience difficulties in developing their language skills, particularly in areas such as vocabulary, grammar, and comprehension. Moreover, the diversity of learners' needs and backgrounds in an inclusive classroom can make it challenging for teachers to assess learners' performance and provide effective feedback (Adeyemi, 2022). All these challenges inevitably lead to their poor performance in English language both in internal and external examinations. This is evident in the Chief Examiners' Reports of the West African Examinations Council (WAEC) and the National Examinations Council (NECO) for 2023 and 2024. According to WAEC (2023), candidates' performance in English language was generally poor, with many struggling to express themselves clearly and accurately in writing. Similarly, NECO (2024) points out that candidates' performed poorly in English language due to weaknesses in grammar, vocabulary, and comprehension. These reports underscore the need for urgent attention to be given to addressing the challenges that students face in learning English language, in order to improve their performance in the subject. Addressing such challenges in secondary schools in Nsukka Education Zone may not be feasible. This is because in teaching and learning the English language in this area, teachers mainly utilize the traditional instructional resources like writing boards and textbooks without integrating interactive activities and techniques that cater to individual needs of learners in learning process. The sole use of such tools promotes teacher-centered approach to teaching, and rote learning. Teacher centered approach to teaching and rote learning, according to Oluikpe, Ugwu and Ossai (2024) are not effective for English language teaching and learning, particularly in an inclusive classroom. It is therefore essential for teachers to leverage technology innovations which promise to create more effective, efficient, and engaging learning environments for diverse learners in an inclusive classroom.

Technology refers to the application of scientific knowledge for practical purposes, especially in industry, medicine, and education (Koehler, 2020). According to Altbach (2020), technology can be viewed as a set of techniques, skills, and methods used to achieve specific goals or objectives. It encompasses the use of tools, machines, and systems to solve problems, improve efficiency, and enhance productivity (Picciano, 2022). Existence of technology without adequate knowledge, skill and information for its use cannot lead to maximum productivity in any area of human endeavour. It takes innovation in technology for various technological tools to be applied in such a way that they can drive change, improvement, and progress in various fields and disciplines. Technology innovation refers to the process of creating new or improved technological products, services, or processes that transform the way people live, work, and learn. According to the Organization for Economic Cooperation and Development (OECD) (2019), technology innovation refers to implementation of a new or significantly improved product, method, or process. It is the development and application of new technologies, such as artificial intelligence, blockchain, and the Internet to create new industries or transform existing ones (Altbach, 2020). The International Society for Technology in Education (ISTE) (2020) defines technology innovation as utilization of technology to create new and better ways of teaching, assessment and learning. Picciano (2022) similarly defines it as the use of digital technologies, such as online learning platforms, learning management systems, and educational software, to create innovative and new ways of teaching, learning, and assessing. In education, technology innovation can be seen as the strategic integration of digital tools, resources, and pedagogies to enhance teaching, learning, and assessment.

Technology innovation is highly relevant in education, as it has the potential to transform the learning experience and improve academic outcomes. According to a report by the National Center for Education Statistics (NCES) (2020), technology innovation can increase student engagement, motivation, and access to educational resources. Moreover, technology innovation can facilitate personalized learning, enable real-time feedback and assessment, and enhance collaboration and communication among students and teachers (Kukulska-Hulme, 2020). As noted by Hwang (2022), technology innovation can also promote equity and inclusion in education, particularly for students with disabilities and those from disadvantaged backgrounds. In line with this, Afolayan (2020) states that technology innovation can provide equal access to learning opportunities for students with diverse abilities, cultures, and languages. English language teachers can leverage technology innovation to create personalized learning experiences that cater to the unique needs of each

student (Hwang, 2022). For instance, teachers can use text-to-speech software to support students with visual impairments or provide audio materials for students with hearing impairments.

The vital roles of implementing technology innovation in English language classroom notwithstanding, the implementation cannot be effective if teachers' perception of about it is According to Yusuf (2020), teachers' perception refers to the process by which negative. teachers interpret and make sense of their teaching experiences, which in turn influences their attitudes, beliefs, and practices. It refers to affective and cognitive processes by which teachers construct meaning from their interactions with colleagues, students, and the school environment, which shapes their instructional decisions. English language teachers' perceptions of technology innovation are crucial in promoting inclusivity in their classrooms. Research has shown that teachers who value technology innovation are more likely to integrate it into their teaching practices, leading to improved learning outcomes for students with diverse abilities (Adeyemi, 2022). Another factor which can influence effective implementation of technology innovation in English language classroom is the use of effective technology-based strategies. Technology-based strategies refer to the pedagogical approaches that leverage technology to facilitate student-centered learning, collaboration, and communication, through the use of technology (Kukulska-Hulme, 2020). Hwang (2022) defines it as the instructional approaches and methods that utilize digital resources, platforms, and tools to support teaching and learning. To support the learning needs of students with diverse abilities, English language teachers can employ specific technology-based strategies, such as using multimedia resources, online learning platforms, and assistive technologies (Adedimeji, 2022). For example, teachers can use multimedia resources, such as videos and podcasts, to provide multiple means of representation and engagement for students with different learning styles. Additionally, online learning platforms can provide students with opportunities for self-paced learning and feedback, while assistive technologies can support students with physical or cognitive disabilities.

Technology-facilitated collaboration tools such as zoom, discussion forums, and instant messaging apps, among others can also be leveraged to enhance peer-to-peer interactions among students from diverse backgrounds in inclusive English language classrooms. Johnson and Johnson (2020) define peer-to-peer interaction as the interpersonal exchange between learners, where they share feelings, ideas, thoughts, and believe; and work together to achieve common goals. Technology-facilitated collaboration tools are highly relevant to peer-to-peer interaction in inclusive classrooms. These tools enable students to collaborate, communicate, and interact with each other in a virtual or online environment, regardless of their abilities (Kukulska-Hulme, 2020). According to Picciano (2022), technology can facilitate communication and collaboration among students, promoting social inclusion and reducing feelings of isolation.

English language teachers can use online discussion forums, video conferencing tools, and collaborative document editing software to facilitate peer-to-peer interactions and group work among students. For instance, teachers can use online discussion forums and video conferencing tools to facilitate debates and discussions on different aspects of the English language. By leveraging technology-facilitated collaboration tools, English language teachers can create inclusive learning environments that promote interactivity in English language classroom for improved learning and achievement. This statement is validated by Vygotsky's social constructivist theory (1978). According to the theory, learning is a socially constructed process where students learn through interactions with their peers, teachers, and

environment. In the context of this study, the Social Constructivist Theory suggests that technology can facilitate inclusive teaching practices by providing opportunities for students to interact with each other, their teachers, and digital resources. This study is timely for teachers, students, and policymakers in the twenty-first century where technology has become the order of the day. This is because teachers need to be equipped with the knowledge and skills to effectively integrate technology into their classrooms to support students with diverse abilities; while students, on the other hand, require access to technology that can facilitate their learning and promote social inclusion. For policymakers, this study provides valuable insights into the role of technology in promoting inclusive education. The findings can inform policy decisions on the allocation of resources, teacher training, and curriculum development.

Research Questions

This study was guided by the following research questions:

- 1. How do English language teachers perceive the role of technology innovation in promoting inclusivity in their classrooms?
- 2. What specific technology-based strategies can English language teachers employ to support the learning needs of students with diverse abilities?
- 3. What are the possible ways of promoting peer-to-peer interactions among students from diverse background through technology-facilitated collaboration tools?

Methods

The research design adopted for this study is a descriptive survey. This design is appropriate for this study which sought to collect data on how technology innovations can be leveraged to foster inclusivity in English language classroom. This is because according to Nworgu (2015) descriptive survey research design is interested in collecting data, and using the data to describe in a systematic way the features, characteristics and facts about a given population. The study will be carried out in Nsukka Education Zone. The population of the study was 122 English language teachers in the 62 government-owned secondary schools in the area of the study. There was no sampling due to the manageable size of the population. To collect data, a questionnaire titled "Questionnaire on Technology Innovations in English Language Classroom" was used for data collection. The questionnaire is structured on a 4-point rating scale, with options ranging from Strongly Agree (4 points) to Agree (3 points), Disagree (2 points) and Strongly Disagree (1 point). This scale will enable respondents to express their opinions on leveraging technology innovation to foster inclusivity in English language classrooms. The questionnaire was validated by three experts from the Faculty of Education, University of Nigeria, Nsukka to ensure its face validity. Additionally, the reliability of the questionnaire was determined using Cronbach Alpha statistics, which yielded a reliability index of 0.87, indicating a high level of internal consistency. Data analysis will be performed using mean and standard deviation to describe the responses. A benchmark of 2.50 will be used to interpret the results.

Results

Research Question One: How do English language teachers perceive the role of technology innovation in promoting inclusivity in their classrooms?

Table 1: Mean and standard deviation scores of the responses of teachers on how English language teachers perceive the role of technology innovation in promoting inclusivity in their classrooms

International Journal of Studies in Education [Special Edition] – [2025], Vol. 21, Issue 2:92-102
ISSN: 2636-632O [ONLINE] - 2636-6339 [PRINT]

S/N	Item Statement	Mean	Standard Deviation	Decision
1.	Technology innovation can enhance flexible grouping to promote collaboration in inclusive classroom.	3.24	.67	Agree
2.	Technology innovation can provide multiple means of representations to meet the needs of various learners.	3.10	.53	Agree
3.	Technology innovation can enhance individualized learning, ensuring personalized support.	3.19	.66	Agree
4.	Technology innovation can help teachers tailor lessons to meet diverse learning needs in inclusive classroom.	3.17	.65	Agree
5.	Technology innovation can help teachers adapt assessments to accommodate learners with special needs.	3.18	.67	Agree
6.	Technology innovation can facilitate communication among teachers and students in an inclusive classroom.	3.25	.64	Agree
7.	Technology innovation can help teachers provide constructive feedback to all learners.	2.72	.68	Agree
8.	Technology innovation can help teachers provide step-by-step instructions to promote understanding of learners in inclusive classroom.	3.00	.57	Agree
9.	Technology innovation can foster supportive atmosphere in an inclusive classroom.	3.10	.59	Agree
10.	Technology innovation can help teachers engage in ongoing professional development to enhance inclusive teaching practices.	3.35	.61	Agree
	Overall Mean	3.13	.63	Agree

Table 1 shows how the respondents perceive the role of technology innovation in promoting inclusivity in their classrooms. The result shows that for all the items, the mean scores range from 2.72 to 3.35 with the overall mean score of 3.13. This indicates that teachers have positive perception about the role of technology innovation in promoting inclusivity in their classrooms. Again, the standard deviation values which range from 0.53 to 0.68 with the overall standard deviation of 0.63 indicate that the standard deviation values are close nature. This shows that the teachers' responses were similar.

Research Question Two: What specific technology-based strategies can English language teachers employ to support the learning needs of students with diverse abilities?

Table 2: Mean and standard deviation scores on specific technology-based strategies which English language teachers can employ to support the learning needs of students with diverse abilities.

S/N	Item Statement	Mean	Standard Decision	
	The following technology-based strategies		Deviation	
	can be employed by English language			

	teachers to support the learning needs of students with diverse abilities:			
1.	Use of assistive technologies to support students with disabilities	3.23	.58	Agree
2.	Use of online collaboration tools to facilitate group work among students with diverse abilities	2.82	.44	Agree
3.	Use of educational simulations to support students with diverse learning needs	2.66	.61	Agree
4.	Use of augmented reality (AR) technologies to provide immersive learning experiences for students with diverse abilities	2.54	.27	Agree
5.	Use of online resources to provide supplemental instruction for students with diverse learning needs	2.90	.45	Agree
6.	Use of data mining to inform instruction	2.60	.72	Agree
0. 7.	Use of chat rooms to facilitate collaboration among students with diverse abilities	3.21	.55	Agree
8.	Use of digital portfolios to assess student learning	3.28	.61	Agree
9.	Use of online tutoring platforms to provide additional support for students with diverse	3.32	.41	Agree
10.	learning needs Use of artificial intelligence (AI) to support students with diverse abilities	2.60	.78	Agree
	Overall Mean	2.92	.55	Agree

Table 2 shows how the responses of the teachers on specific technology-based strategies English language teachers can employ to support the learning needs of students with diverse abilities. The result shows that for all the items, the mean scores range from 2.54 to 3.32 with the overall mean score of 2.92. This indicates that teachers are of the view that all the items on the table are specific technology-based strategies which English language teachers can employ to support the learning needs of students with diverse abilities. Again, the standard deviation values which range from 0.27 to 0.78 with the overall standard deviation of 0.55 indicate that the standard deviation values are close nature. This shows that the teachers' responses were similar.

Research Question Three: What are the possible ways of promoting peer-to-peer interactions among students from diverse background through technology-facilitated collaboration tools?

Table 3: Mean and standard deviation scores of responses of teachers on the possible ways of promoting peer-to-peer interactions among students from diverse background through technology-facilitated collaboration tools

S/N	Item Statement	Mean	Standard Deviation	Decision
1.	Using video conferencing tools to facilitate real time discussions.	2.67	.56	Agree

International Journal of Studies in Education [Special Edition] – [2025], Vol. 21, Issue 2:92-102 ISSN: 2636-6320 [ONLINE] - 2636-6339 [PRINT]

2.	Using online discussion forums to enable	2.90	.62	Agree
	English language learner to share ideas on			U
	any topic.			
3.	• •	2 21	.49	Agree
5.	Using social media platforms to facilitate	3.21	.49	Agree
	peer-to-peer interactions among students			
	from diverse backgrounds.			
4.	Using technology-facilitated collaboration	2.52	.55	Agree
	tools to help reduce linguistic barriers among			
	students from diverse backgrounds.			
5.	Using collaborative document editing tools	3.30	.57	Agree
	such as Microsoft Teams to enable students			U
	to work together on writing projects.			
6.	Using virtual role-play to enable students to	2 53	.78	Agree
0.	practice conversations in a simulated	2.55	.70	Agitt
	1			
-	environment.	0.70	C A	
7.	Using learning communities to facilitate	2.78	.64	Agree
	team work among students			
8.	Using online group presentation tools to	2.59	.67	Agree
	make learners create presentations together.			
9.	Using online games to encourage students to	3.10	.45	Agree
	practice English language skills.			-
10.	Assigning English language learners to	3.15	.58	Agree
	create group podcasts on various topics.	. –		\mathcal{O}
	Overall Mean	2.88	.59	Agree
			,	

Table 3 shows how the responses of the teachers on how technology-facilitated collaboration tools enhance peer-to-peer interactions among students from diverse backgrounds in inclusive English language classrooms. The result shows that for all the items, the mean scores range from 2.52 to 3.30 with the overall mean score of 2.88. This indicates that teachers agree that all the items reveal how technology-facilitated collaboration tools enhance peer-to-peer interactions among students from diverse backgrounds in inclusive English language classrooms. Again, the standard deviation values which range from 0.45 to 0.78 with the overall standard deviation of 0.59 indicate that the standard deviation values are close nature. This shows that the teachers' responses were similar.

Discussion

The findings of the first research question, which explored English language teachers' perceptions of the role of technology innovation in promoting inclusivity in their classrooms, revealed that teachers generally have a positive perception about the use of technology innovation to support inclusive teaching practices. The majority of teachers agreed that technology innovation can enhance flexible grouping to promote collaboration in inclusive classroom, facilitate personalized learning, help teachers adapt assessments to accommodate learners with special needs, provide opportunities for student feedback, and enhance teacherstudent communication for students with diverse abilities. The findings are consistent with previous research by Alghamdi (2020), who found that teachers believed technology could facilitate inclusive education by providing equal access to learning opportunities for students with diverse abilities. The findings are also in tandem with a study by Hwang (2022) which revealed that teachers perceived technology as a tool to promote student-centered learning and increase student engagement. Additionally, the findings agree with that of a study by

Picciano (2022) which revealed that technology could enhance teacher-student communication by providing opportunities for feedback, guidance, and support.

The findings of the second research question, which investigated specific technologybased strategies that English language teachers can employ to support the learning needs of students with diverse abilities, revealed that teachers are of the view that a range of strategies, including the use of online learning platforms, podcasts, virtual reality and artificial intelligence, can be employed to support the learning needs of students with diverse abilities. This finding is consistent with that of Yusuf (2020), who found that teachers used multimedia resources, such as videos and podcasts, to support students with diverse learning needs. Similarly, a study by Adeyemi (2022) revealed that teachers used online learning platforms to provide students with opportunities for self-paced learning and feedback. The findings also revealed that teachers' use of assistive technologies could support students with disabilities. This finding is supported by previous research by Adedimeji (2022), who found that assistive technologies could facilitate inclusive education by providing students with disabilities equal access to learning opportunities.

The findings of the third research question, which explored possible ways of promoting peer-to-peer interactions among students from diverse background through technology-facilitated collaboration tools revealed that teachers believe that using learning communities to facilitate team work among students; using technology-facilitated collaboration tools to help reduce linguistic barriers among students from diverse backgrounds, and using social media platforms to facilitate peer-to-peer interactions among students from diverse backgrounds, among others are possible ways of promoting peer-to-peer interactions among students from diverse background through technology-facilitated collaboration tools. This finding is consistent with previous research by Johnson and Johnson (2020). The researchers found that technology could facilitate collaborative learning by providing students with opportunities to work together on group projects. The findings also align with that of Kukulska-Hulme (2020) which showed that technology could facilitate communication among students from diverse backgrounds by providing opportunities for online discussions and peer feedback.

Conclusions

This study revealed that teachers generally have a positive perception about the role of technology innovation in promoting inclusivity in classrooms. It also showed that specific technology-based strategies can be employed by English language teachers to support the learning needs of students with diverse abilities; and that using learning communities and social media platforms to facilitate team work, among others, are possible ways of promoting peer-to-peer interactions among students from diverse background through technology-facilitated collaboration tools. These imply that teachers believe that inclusivity can be achieved in English language classrooms among learners from different backgrounds, and those with different ability levels and learning needs through technology innovations.

Recommendation

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

- 1. English language teachers should adopt technology-based strategies to support the learning of learners with diverse abilities in inclusive classroom.
- 2. Technology-facilitated collaboration tools should be used by English language teachers to enhance peer-to-peer interaction among students from diverse backgrounds in inclusive classroom.

International Journal of Studies in Education [Special Edition] – [2025], Vol. 21, Issue 2:92-102 ISSN: 2636-6320 [ONLINE] - 2636-6339 [PRINT]

3. Ministry of Education should establish programs to enable English language teachers acquire knowledge and skills needed to adopt technology innovation so as to foster inclusivity in English language classrooms.

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