JOURNAL OF INTERNATIONAL ASSOCIATION OF LANGUAGE EDUCATORS (JIALE)

A Publication of International Association of Language Educators

Vol. 5 No. 1, (June 2025)

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EDITORIAL COMMENT

The Editorial Board is pleased to announce the publication of Volume 5 of Journal of International Association of Language Educators (JIALE). This edition contains 32 well researched articles on various issues in Language Teaching and Learning, including Policy issues. This fifth volume of JIALE contains articles that largely covered thematic area of artificial intelligence in Language Education. The contributors are seasoned scholars in Language Education. Articles in this volume address current issues and problems in the application of artificial intelligence in language teaching and learning. There is no gainsaying the fact that volume 5 (June, 2025) of Journal of the International Association of Language Educators (JIALE) contains well researched and discussed academic papers that make positive contributions to knowledge, scholarship and practice. Consequently, the articles will contribute immensely to the growth and development of Language Education, not only in Nigeria but in the African continent and beyond. Therefore, individuals, researchers, teachers, educators, ministries and agencies saddled with the responsibility of addressing the problems of language teaching and learning would find the papers in Volume 5 of JIALE useful reference materials. The papers in this volume will also provide rich reference materials for postgraduate students who are in the stage of literature review in their programmes. As JIALE is published once a year, we look forward to the next volume in 2026.

Thank you.

Prof. Uche B. Gbenedio

EDITORIAL POLICY

GUIDELINES FOR SUBMISSION OF ARTICLES

The Journal of International Association of Language Educators (JIALE) is a peer-reviewed scholarly journal published by International Association of Language Educators(IALE).

Those wishing to submit papers for inclusion in any volume of the journal are expected to note the following guidelines carefully and allow them to guide the style and format of their papers.

i. Submission of articles is open to members and non- members across the globe.
ii. Articles submitted for publication must be in line with the objectives of the International Association of Language Educators (IALE) as follows:

1. To contribute positively to the theory and practice of Language Education globally.
2. To provide services to teachers at various educational tiers that will promote effective teaching and learning of language globally.
3. To promote the professional development of Language Education scholars and practitioners.
4. To provide technical assistance on language related matters to government and corporate bodies globally.
5. To consider regularly Language Education issues and advise government appropriately.
6. To increase awareness on the central role of language in instruction and the society.
7. To cooperate with organisations which have similar aims and objectives with those of the Association.

iii Papers must be original and may not have been previously submitted to any journal for publication.
iv. Papers must not be more than 18 pages maximum, including references, in MS words typed 1.5 line spacing on one side of A4 paper in Times New Roman 12-font size with an abstract of about 300 words with 5 keywords.
v. Contributors are required to make sure that they conform with current APA format and present their papers in MS word. Such papers must carry the names, institutional affiliation as well as the e-mail addresses of the contributors.
vi. Two hard copies of the paper must be sent to the Editor with N5000.00 (or 20 US Dollars for foreign contributors) assessment fee. This is, however, subject to review in line with the prevailing economic realities.
vii. Papers could also be sent in soft copy to the dedicated e-mail of the journal which is jialeeditorial2020@gmail.com
viii. Contributors of successful papers will be contacted for the payment of the current publication fee which changes from time to time to reflect current economic realities.
ix. Submissions should be made on or before 30th April of each year to enable the publication of the journal latest 30th June. This will also enable us to advertise the published journal at the annual conferences of IALE in September of each year.
x. Acceptance letters will be issued in respect of articles assessed and found publishable, not later than 31st May of the publication year.
xi. Publication fees of 20, 000 Naira (for members in Nigeria) and 100 US Dollars(for members outside Nigeria), and 25,000 Naira (for non-members in Nigeria) and 150 US Dollars(for nonmembers outside Nigeria)must be paid upon the return of a clean/soft copy of the paper accepted for publication not later than two weeks after the issuance of acceptance letter.
xii. Assessment and publication fees should be paid directly into the association's account

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Contents

Effect of Digital and Print Medium on Secondary School Students' Reading Comprehension
Sunmonu Adedoyin Khadijah, Ph.D *1*

Pre-Service Teachers' Use of AI Tools for Grammar Practice: Implications for Teacher Education and Language Pedagogy
Balogun, Kate Ehis & Idiakhoa, Anthonia *12*

Artificial Intelligence: A World Order for Yorùbá Language Pedagogical Activities and Domestication
Dr. Adebisi Elizabeth Banjo, Mr. Adekunle, Asimiyu Adebowale & Mr. Adebomeyin Oluwatosin Amisu *24*

Artificial Intelligence (AI) and Language Education in the 21st Century
Prof. R. B. Danner *33*

Yoruba Language Teachers' Knowledge of and Attitude to Resource Improvisation in Yorùbá Orature in Public Senior Secondary Schools in Ibadan, Nigeria
Adeola, R. Adetunji, Ph.D., Esther A. Aduroja, Ph.D & Prof. A. A. Adeyinka *41*

The Influence of Artificial Intelligence (AI) on Writing as a Component of the English Language: A Bibliographical Analysis
Abijo Johnson Ayobami Ph.D and [2]Sukurat Olabisi Yusuf *48*

Challenges of Using Artificial Intelligence in the Teaching of Yoruba Language in Senior Secondary Schools in Ibadan Metropolis, Nigeria: Teachers' Perspectives
Esther Ademidun Aduroja and Adeola Rafiat Adetunji *60*

Artificial Intelligence and the Teaching of English Language Writing Skill
Adebayo, Jameelah Oshuwa *69*

AI as a Co-Teacher: Rethinking the Role of Language Educators in the Age of Automation
Ogbeide, Emmanuel Osaro, Aisuegbeihien, Ebehitale & Solomon-Alufohai, Peace Joan, Ph.D *77*

The Impact of Artificial Intelligence on English Language Teaching And Learning: A Study of Ai-Powered Chatbots
Nnamani Mercy Ijeoma *87*

The Impact of Language Policy Reforms on Language Teaching and Learning in Imo State
Rev. Fr. Amuchie, Benedict Chidiebere Chiedozie *96*

Institutional Readiness, Academic Perception, and Pedagogical Shifts in the Integration of Generative AI in Nigerian Higher Education
Dr. Temitope L. Akintola *106*

Affordances of AI in Indigenous Language Maintenance
Adeniji, Grace Toluwalope & Prof. D. O. Fakeye *121*

Students' Use of Metacognitive Reading Strategies in Selected Secondary Schools in Ibadan Metropolis, Nigeria
Ajimoh Adefowora Adeuja, Ph.D *131*

Cautionary Lessons from the Gambia: Balancing Criticism and Support in AI-Driven Language Education
Dr Omobolaji Akanbi Olufunmilola *142*

Role of AI in Teaching and Learning of Arabic Language in Pre-Tertiary Institutions in Nigeria
Alfabanni Tunde Ahmed, Ph.D *160*

Effect of Digital and Print Medium on Secondary School Students' Reading Comprehension

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Abstract

This study determined the effect of reading medium on the reading comprehension of public senior secondary school students in Ibadan, Nigeria. The study adopted the pretest – posttest control group quasi-experimental design with three null hypotheses tested at 0.05 level of significance. Participants for the study were 120 senior secondary school two students selected from public senior secondary schools in Ibadan. Out of the 120 students, 60 students without android phones were assigned to group 1 while 60 students with android phones were assigned to group 2. Data analysis was done using Analysis of Covariance (ANCOVA). Results showed that there was no significant main effect of treatment (reading digital texts) on students' achievement in reading comprehension ($F_{(1; 43)} = .230$; $p > 0.05$; partial $\eta 2=0.005$). There was also no significant main effect of gender on students' achievement in reading comprehension ($F_{(1;43)}= .702$; $p > 0.05$; partial $\eta 2 = .016$). Furthermore, results revealed that there was no significant interaction effect of treatment and gender on students' achievement in reading comprehension ($F_{(1;43)}=.171$; $p>0.05$; partial $\eta 2 = 0.004$). Based on the findings of the study, the researcher recommends that English Language teachers need to teach students reading comprehension strategies that will enhance students' comprehension of both printed and digital texts.

Keywords: Printed texts, Digital texts, reading medium, reading comprehension

Introduction

Reading is one of the language skills necessary for effective communication as well as learning across the life span of an individual. As a crucial form of communication, it is a major determinant of students' academic achievement or failure. The importance of reading is quite enormous. Reading widens the scope of individuals and exposes them to ways of life and cultures other than their own. It also influences the thinking of individuals and their world view due to the meanings readers ascribe to texts as reading takes place.

Reading is defined as the identification of symbols and association of appropriate meaning with them (Palani, 2012). It is an activity that involves the decoding of encoded symbols and making meaning out of it. It is an interactive process because readers use their cognitive facilities and prior knowledge to interact with texts. Reading requires the combination of attention, memory, perceptual processes and comprehension processes (Demiroz, 2010). Reading goes beyond being able to decode the printed letters on a page. According to Freebody and Luke (1999), when readers engage in the reading process, they draw on a family of practices such as using texts functionally, critically analysing and transforming texts, breaking the code of texts and participating in the meanings of texts. This implies that reading is an activity which revolves around readers' knowledge of the context of reading and the use of effective reading skills and strategies to ensure that text comprehension takes place.

Reading comprehension, to Shanahan, Callison, Carriere, Duke and Pearson (2010) is the process of simultaneously extracting and constructing meaning through interaction and involvement with written language. Extracting meaning is to understand what an author has stated, explicitly or implicitly. Constructing meaning is to interpret what an author has said by bringing one's capacities, abilities, knowledge, and experiences to bear on the material being read. This definition of reading

comprehension emphasises both what the author has written and readers' ability to use background knowledge and thinking ability for meaning making. Pressley (2002) also posits that good text comprehension emerges if a reader is able to predict what the text may be about, relates information in the text to background knowledge, asks questions while reading, monitors the understanding of the text, and summarizes what is being read. This implies that the ultimate goal of reading comprehension is to understand and draw meaning from written text.

Reading comprehension is one of the major components of the English language curriculum (NERDC, 2014) examined at different levels of education in Nigeria. The questions on reading comprehension in the Senior School Certificate Examination in English Language are meant to test students' ability to find appropriate answers equivalent for selected words or phrases, understand the use of English expressions that reveal or reflect sentiments or emotions and attitudes and identify the main and supporting ideas in a passage. Furthermore, the purpose of testing reading comprehension is to ascertain whether candidates are able to understand detailed information, follow given directive or instruction and acquire general knowledge. The West African Examinations Council (WAEC) specifically spells out the distribution of scores to the component parts of English Language. Paper 1 is made up of essay writing (50 marks), comprehension (20 marks) and summary (30 marks) This implies that 50 out of the 100 marks allotted to paper 1 is comprehension based because students need to possess sound reading comprehension skills in order to read and answer the comprehension and summary aspects of the paper.

In spite of the importance of reading comprehension, students' performance in this aspect of English language has not been impressive. Scholars such as Okere (2012) and Asuru (2017) have established that students in the senior secondary schools lack basic comprehension skills, which include the ability to distinguish main ideas from supporting details, the ability to infer, and the ability to evaluate or pass judgment on what is read. The West African Examinations Council Chief Examiner's report (2019) also identified candidates' weaknesses in reading comprehension as poor knowledge of idioms and their meanings, mindless lifting of answers from set passages and inability to infer meaning from the passages. In the view of Garba and Hussaini (2024), the consistently poor performance of students in English Language calls for concern.

The poor state of reading comprehend-sion among secondary school students has resulted in numerous studies in the field of reading comprehension that focus on factors which influence reading comprehension and various means of intervention. For example, researchers have suggested the use of various instructional strategies that could be of help to students in reading comprehension. Examples are guided and unguided reading (Okere,2012), multimodal and literature circles (Chikwendu, 2014), storytelling and literature circles (Kolawole ,2015) and differentiated and scaffolding strategies (Awolere ,2015). However, a critical area that has received less research attention is the medium through which reading takes place. Thus, recent research in the areas of reading and reading comprehension focus on the reading medium as an important aspect of the reading process. This is why Alisaari, Turunen, Kajamies, Korpela and Hurme (2018) argue that it is likely that the medium through which a text is read influences the reading comprehension process. Singer and Alexander (2017) had earlier stated that there is still not enough research done on how digital versus print medium influences comprehension. Thus, the influence of printed books and electronic books (e-books or digital texts) on reading comprehension needs more attention in research. In order to do this, this study sought to:

1. ascertain whether there is a significant main effect of treatment (reading digital texts) on students' achievement in reading comprehension.
2. determine whether there is a significant main effect of gender on students' achievement in reading comprehension.
3. determine whether there is a significant two-way interaction effect of treatment (reading digital texts) and gender on students' achievement in reading comprehension.

Literature Review

The nature of literacy is rapidly changing as new technologies enter people's lives and their learning environments. Alexander and Fox (2004) state that a variety of novel text forms (e.g. multimedia books and tweets) and mediums for presenting such texts (e.g. iPad and Kindle) have emerged, which may present new possibilities and new challenges for readers. Reading is increasingly digitized and the popularity of handheld, portable digital devices such as e-readers, mobile phones and tablets is making reading screen – rather than print-bound. The move from paper to screen makes evident that reading is a case of human-technology interaction. (Mangen & van der Weel, 2016). In addition to more commonly addressed perceptual and cognitive components of discourse processing, reading entails manual engagement with a device (e.g. a print pocket book, an e-reader or a tablet and a mobile phone). Thus, there is an increasing dominance of digital reading over paper reading due to the widespread popularity of electronic books or digital texts.

Electronic books rose to prominence in the late 1990s and this has made e-books become popular (Langston, 2003). An e-book comprises a digital body primarily of text with a defined scope. Vassiliou (2008) defines e-books in two parts. The first part of e-book summarizes the essential and reasonably stable nature of e-books referring to digital object with textual and/or other contents. It is the result of integrating the common concept of a book with features that can be provided in an electronic environment. The second part refers to in use features such as search and cross reference functions, reference materials, monographs, hypertext links, bookmarks, interactive dictionaries, highlights, multimedia objects and note taking. The term "e-book" is also used to describe a text similar to a book that is digitally displayed on the screen of a computer, a personal digital assistant, a mobile phone or a specifically designed reader. It may comprise text, graphics, video, animation, and/or sound (Jeong, 2012). The e-book is a new platform for accessing digital information that capitalizes on the benefits of electronic reading while providing many of the advantages of paper books (p-books) (Landoni & Hanlon, 2007).

There are several studies involving the use of e-books in the classroom as a medium of teaching (Franco & Bidarra, 2022; Sari, Rahmatina, Sundari & Aulia, 2022; Saptono, 2023). Most of these studies discuss the effectiveness of e-books in enhancing the learning process. These studies report that e-books or digital texts have the potential to create new learning and teaching opportunities that were not available before. They are more flexible and accessible than printed texts. Moreover, the rapid popularity and people's accessibility to handheld devices as well as an increased access to broadband internet have made e-books more popular. In addition, electronic publishing has now become easier, resulting in readers' access to quality e-books on different topics. Digital texts are time saving, portable, have high storage space and ease teaching and learning processes.

The benefits of e-books notwithstanding, scholars have noted some technical factors that affect using e-books for learning, especially as it affects reading comprehension. Singer and Alexander (2016) state that there are visual ergonomic characteristics of digital media that must be

considered when talking about comprehension of digital texts. One of such is visual legibility of digital texts which is basic to word processing and comprehension. Visual visibility is influenced by several factors including text size, screen resolution, backlighting and luminance contrast (Lee, Ko, Shen & Chao, 2011). These factors can result in physical and perceptual differences for print versus screen reading. For example, Liquid Crystal Display (LCD) computer screens, the most common method of reading digitally, are found on most desktop, laptop, and handheld devices such as smartphones. Researchers have found that these screens might contribute to visual fatigue as a result of the lighting source (Mangen, Walgermo & Bronnick, 2013). In addition, processing differences between digital and printed text has to do with sequential versus continuous reading – that is, whether a reader must scroll frequently between portions of text or whether reading progresses in a more uninterrupted fashion (Proaps & Bliss, 2014). From the available research, there is evidence that frequent scrolling increases the cognitive demands on readers and, thus, may negatively affect recall (Krenca, Taylor & Deacon, 2024; Skovdahl, Salmeron & Anmarkrud, 2025).

There are also metacognitive considerations when reading digital texts. Singer and Alexander (2016) state that repeated or intensive engagement in digital multitasking may contribute to a more superficial processing of text. Liu, Aamodt, Wolf, Gelernter and Mark (2009) reported that when working on a digital device, readers switched activities every 3 to 10 minutes. These researchers argued that it seemed improbable for these readers to engage in deep thought when they are switching so often during the text processing. Even in those instances when readers are not switching activities, they may be more apt to scan digital texts than to read them deeply.

Annisette and Lafreniere's (2017) 'Shallowing Hypothesis' suggest that recent media technologies have led to a dramatic decline in ordinary daily reflective thought. According to this hypothesis, certain types of social media promote rapid, shallow thought that can result in cognitive and moral shallowness if used too frequently. The use of such social media sometimes impacts learners negatively. For instance, in a study to investigate the influence of Short Message Service (SMS) on the written composition of English as Second Language (ESL) pre-service teachers, Ohia, (2016) found that there were non-standard English features in the written composition of pre-service teachers in selected Colleges of Education in Nigeria. Furthermore, the wealth of information that resides in the digital universe, combined with the increasing speed of access, may also overwhelm intentions to process digital content critically or analytically (Wallis, 2010). Moreover, inability to engage in deep reading of texts when reading digitally may also be due to distractions when reading such texts. Students feel more easily distracted when reading e-books. They find it more difficult to engage in challenging tasks that require sustained attention and this affects their learning processes.

Teaching and learning in the 21st century have undergone rapid changes due to the influence of technology. The role of the teacher as well as the student is changing due to the use of technology in the teaching-learning process. Today's students grow up with and are familiar with technology. According to McHugh (2013), teachers in all areas of education are continually dealing with a student make-up that are more wired and that grew up in a techno-drenched environment that has trained them to think and process information in very different ways. While Prensky, (2001) refers to today's students as "digital natives", McHugh, (2013) submits that the new generation of digital learners take in the world through the filter of computing devices. They use such devices for many purposes such as entertainment,

communication and music related activities. A 2013 Ofcom survey in the United Kingdom found that tablet use at home by children aged 5 to 15 almost tripled between 2012 and 2013, rising from 14% to 42%. Some students also spend a lot of times reading on digital devices. Current studies also show that some students in Nigeria prefer the use of different digital devices for reading due to the ease of access and convenience (Afolabi & Adeyanju, 2025). Hence, it is important to explore whether the medium through which reading takes place affects reading comprehension.

Studies in the field of reading research have reported contradictory results regarding whether reading traditionally in print or digitally on the screen of a computer or a tablet is better for reading comprehension. Many researchers have argued that students comprehend printed texts more effectively than digital texts (Mangen, Walgermo & Bronnick, 2013; Kaygisiz, 2025) and that students also prefer printed texts (e.g. Ackerman & Lauterman, 2012). Opposite results arguing for the benefits of reading digitally on reading outcomes (Kerr & Symons, 2006; Ali, Usmani & Kottaparamban, 2024) as well as for the preference for digital medium (Singer & Alexander, 2017; Hargreaves, Robin & Caldwell, 2022) have also been reported. Some studies however found no difference between reading medium and learning (Rockinson-Szapkiw, Courduff, Carter & Bennett, 2013; Peras. Mirazchiyski, Pavesic and Recek, 2023).

Various researches have been carried out in Nigeria on the impact of different factors on the reading comprehension process. For example, scholars have examined the effect of different instructional strategies to enhance reading comprehension (Aiyede, 2015; Akande, 2016; Akinsowon, 2016 and Fakeye, 2017). Also, Akpokodje and Ukwuoma (2016) investigated the impact of e-books on reading motivation of students of higher institutions in Nigerian universities. As mentioned earlier, researches around the world indicate that the effect of medium on reading comprehension is inconclusive. The peculiarity of the Nigerian context is due to the fact that the effect of text medium on reading comprehension has not been fully researched thereby making it necessary to investigate the effect of printed and digital texts on students' reading comprehension.

Other variables are associated with the relationship between text medium and reading comprehension. Examples of such variables are gender, decoding skills, students' self-concept as a reader and as a computer user, and students' preference for school tasks on paper, screen or both. The moderator variable that was addressed in this study is gender. Studies have established the importance of gender in students' academic achievement in reading comprehension (Hyde, 2004; Koc, 2016). Researchers have also observed differences in reading comprehension between girls and boys (Hyde, 2004; Cekiso, 2016). In some contexts, girls have been found to be more knowledgeable than boys about effective ways to understand, remember, and summarize texts (OECD, 2010). On the contrary, Rasmusson and Aberg-Bengston (2015) have also shown that boys have better digital reading skills than girls, explained by their experiences in using computers for playing games. This study, thus, determined whether differences exist between genders in reading comprehension while reading in print and digitally.

Hypotheses: the following hypotheses were tested at 0.05 level of significance-

Ho1. There is no significant main effect of treatment (reading digital texts) on students' achievement in reading comprehension.

Ho2. There is no significant main effect of gender on students' achievement in reading comprehension.

Ho3. There is no significant two-way interaction effect of treatment (reading digital texts) and gender on students'

achievement in reading comprehend-sion.

Methodology

The study adopted the pretest-posttest control group quasi-experimental research design wherein the experimental group was exposed to treatment in the form of reading digital texts while the control group was exposed to reading printed texts. Participants were 120 senior secondary school two students from selected public secondary schools in Ibadan. The experimental group comprised 60 students with android phones while the control group comprised 60 students without android phones. Due to the nature of the research, grouping was done using ownership or access to android phones as a criterion. Comprehension passages were sent to students in the experimental group through a Whatsapp group created by the researcher while those in the control group were presented with printed version of the same comprehension passages. One instrument, which is the Reading Comprehension Achievement Test, was used for data collection. In order to establish the face and content validity, the instrument was given to experts in the field of English Language education and necessary corrections were made. It was then trial-tested on 20 SS2 students from a school that was not part of the study. The reliability was determined using test re-test method of reliability and coefficient of 0.88 was obtained. Data from the study was analyzed using inferential statistics of Analysis of Covariance (ANCOVA) with the pretest scores as covariates. ANCOVA was used to enable control for pretest scores among participants in the two groups. All hypotheses were tested at 0.05 level of significance.

Results

$Ho_{1.}$ There is no significant main effect of treatment (reading digital texts) on students' achievement in reading comprehension.

Table 1. Summary of ANCOVA of Posttest of students' achievement in reading comprehension by treatment and gender

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	256.100[a]	4	64.025	46.219	.000	.811
Intercept	55.849	1	55.849	40.317	.000	.484
PRETEST	249.600	1	249.600	180.183	.000	.807
TREATMENT	.318	1	.318	.230	.634	.005
GENDER	.972	1	.972	.702	.407	.016
TREATMENT * GENDER	.237	1	.237	.171	.681	.004
Error	59.566	43	1.385			
Total	7916.000	48				
Corrected Total	315.667	47				

a. R Squared = .811 (Adjusted R Squared = .794)

Ho1: The table shows that there was no significant main effect of treatment on students' achievement in reading comprehension ($F_{(1; 43)} = .230$; $p > 0.05$; partial $\eta 2=0.005$) with an effect size of 0.5%. The null hypothesis that there is no significant main effect of treatment on students' achievement in reading comprehension is therefore accepted.

$Ho_{2.}$ There is no significant main effect of gender on students' achievement in reading comprehension.

The table shows that there was no significant main effect of gender on students' achievement in reading comprehension ($F_{(1;43)}$= .702; p > 0.05; partial η2 = .016) with an effect size of 1.6%. The null hypothesis that there is no significant main effect of gender on students' achievement in reading comprehension is therefore accepted.

Ho_3. There is no significant two-way interaction effect of treatment (reading e-books) and gender on students' achievement in reading compre-hension.

The table shows that there was no significant interaction effect of treatment and gender on students' achievement in reading comprehension ($F_{(1;43)}$=.171; p>0.05; partial η2 = 0.004) with an effect size of 0.4%. The null hypothesis that there is no significant two –way interaction effect of treatment and gender on students' achievement in reading comprehension is therefore accepted.

Discussion of findings

The results of this study indicated that there was no significant main effect of treatment (reading digital texts) on students' achievement in reading comprehension. This implies that text comprehension was not significantly affected by the use of technological tools such as mobile phones. Students' unfamiliarity with digital texts may be due to the fact that they have, over the years, become used to reading and answering comprehension questions using printed texts. This result corroborates that of Chiang (2016) who found that there was no significant difference in reading comprehension between the print-based group and the group exposed to reading on Kindle, an electronic reading device. Also, Singer and Alexander (2016) found that although students demonstrated a clear preference for digital texts, there were no differences across mediums in students' performance in reading comprehension.

Similarly, the finding in this study is in line with that of Porion, Aparicio, Megalakaki, Robert and Baccino (2016) who compared the impact of paper-based and computerized presentation on text comprehension and memorization and found that there was no significant difference between the two media. In the same vein, the results of this study supports that of Mangen, Olivier and Velay (2019) who compared comprehension of a long text read in print book and on Kindle and found that comprehension was similar with both media. The findings of this study, however, negates that of kerr and Symons (2006) who examined whether children's reading rate, comprehension and recall are affected by computer presentation of text and found that children recalled more of the text material that they had read from the computer monitor.

The findings of different studies cited above and that of this study corroborate Annisette and Lafreniere's (2017) Shallowing Hypothesis which suggests that the use of digital media affects deep and reflective learning leading to shallow processing of text. Technology enhances speed and multitasking leading to a decrease in deep comprehension in digital environments. In addition, the distractions associated with reading digital texts makes deep concentration while reading difficult making students resort to skimming and scanning of texts. The result of this is lower comprehension and recall on the part of students. Another important consideration is the cognitive and physiological factors associated with reading digital texts. The physical act of reading printed texts aids memory retention thereby contributing to improved cognition. On the other hand, reading on digital medium leads to visual fatigue which can have detrimental effects on students' cognition. The result of this study has different implications for digital pedagogy. Today's students live in an era where massive information and learning materials are available through the digital medium. Teachers have to ensure that students are taught the required skills and strategies to navigate both

printed and digital texts. Specifically, students need to be taught digital reading skills that will enhance reading comprehension when reading digital texts. This will make it easier for students to engage in reading digital texts for leisure and academic purposes.

The results also indicated that there was no significant effect of gender on students' achievement in reading comprehension when reading digital based texts. This result negates that of Alisaari, Turunen, Kajamies, Korpela and Hurme (2018) who found that boys performed better in reading comprehension in both print and digital media. It also negates that of Rasmusson and Aberg-Bengtsson (2015) whose result indicated a relative difference in favor of boys for digital reading. The discrepancy in the results of these two studies and the present study might be because the present study tried to investigate the effect of gender on digital reading comprehension within an English as a Second Language (ESL) context.

The results also indicated that there was no significant interaction effect of treatment and gender on students' achievement in reading comprehension. The implication of this is that the posttest scores of students was not affected by the interaction between treatment and gender. The result corroborates that of Kosakiewicz (2017) who reported no significant differences in comprehension scores by gender after reading digital and print passages. This result, however, negates that of Rasmusson and Aberg-Bengtsson (2015) whose result indicated a relative difference in favor of boys for digital reading.

Conclusion

This study has proved that exposure to reading on electronic medium such as hand-held devices has no significant effect on students' achievement in reading comprehension. This indicates that though technology is meant to ease the teaching – learning process, students' reading comprehension in technology-based environments may not necessarily improve unless students are taught specific digital reading comprehension strategies as applicable in print-based environments. Thus , the ubiquitous nature of hand-held devices among people, students inclusive, and the volume of materials students have the opportunity of being exposed to make it imperative for our educational system to address how students' comprehension can be improved in a technology driven world.

Recommendations

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

1. Secondary school students should be encouraged to use their hand-held devices for reading educative materials rather than concentrate on the use of their phones for social interaction and entertainment alone.
2. The common practice in schools is that teachers test rather than teach students reading comprehension strategies. There is the need to change this practice. Rather than test alone, teachers need to teach students reading comprehension strategies that will enhance their comprehension of texts whether printed or electronic.
3. There is the need for researchers, policy makers and education professionals in Nigeria to develop methods to support effective digital-based reading and learning, both in the public and private schools.

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Pre-Service Teachers' Use of AI Tools for Grammar Practice: Implications for Teacher Education and Language Pedagogy

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Abstract

The study examined pre-service teachers' use of AI tools for grammar practice, their perceptions, and the challenges they encounter. It further investigated whether students' use and perception of AI tools for grammar practice differed significantly by gender. The study was guided by three research questions and two hypotheses. The descriptive survey research design was adopted for the study. The population comprised all pre-service English language teachers in tertiary institutions in Edo State. The stratified random sampling technique was used to stratify students into academic levels 100, 200, 300, and 400 level. Pre-service teachers in 300 and 400 levels were purposely selected as they have taken part in teaching practice exercise in the 2024/2025 academic session. One instrument, tagged "Pre-service Teachers' Use of AI Tools for Grammar Practice," was used for data collection. The instrument was validated by three language educators from the University of Benin and Ambrose Alli University Ekpoma. The reliability of the instrument was determined with the use of Cronbach Alpha statistics and coefficient of 0.86 was obtained. Data were analysed using descriptive and inferential statistics. The hypotheses were tested at 0.05 level of significance. The results revealed that Grammarly and ChatGPT were the most frequently used tools, while challenges such as cost, poor device access, and lack of internet were reported. Gender differences were found in perceptions, with male students reporting more positive attitudes. Findings highlight the need for improved digital infrastructure, targeted training, and gender-sensitive interventions in teacher education.

Keywords: AI tools, Grammar practice, Pre-service teachers, Perception, Challenges.

Introduction

English grammar plays a crucial role in language proficiency, shaping learners' ability to communicate effectively in both spoken and written contexts. The traditional methods of grammar instruction, though systematic, often fall short in addressing individual learner differences and maintaining sustained engagement. With the emergence of Artificial Intelligence, new opportunities have emerged for delivering grammar instruction that is adaptive, interactive, and tailored to learners' needs.

Artificial Intelligence (AI) is fast transforming language learning with tailored solutions that are adaptive, automated, and personalised. As future language educators who will teach the language in the near future, pre-service language teachers need reliable tools to improve grammar proficiency. Although AI technology is a global phenomenon, there are few empirical researches on how Nigerian pre-service teachers utilise AI tools for grammar practice.

Artificial Intelligence (AI) has emerged as a transformative force in education, reshaping how knowledge is delivered, assessed, and acquired. Increasingly, schools worldwide are adopting AI tools to automate tasks traditionally handled by teachers, personalise learning experiences, and provide instant feedback (Luckin et al., 2016; United Nations Educational, Scientific and Cultural Organzational (UNESCO), 2023). In language education, particularly English grammar instruction, AI-powered platforms such as Grammarly, ChatGPT, and Write & Improve offer real-time feedbacks, contextualised explanations, and adaptive learning pathways that cater to learners across different proficiency levels (Ranalli, 2018; Hsu et al., 2021).

With the rapid emergence of Artificial Intelligence (AI) in language education, pre-service teachers are increasingly exposed to AI-powered tools, such as Grammarly, ChatGPT, and Quillbot for language learning. While these tools provide instant feedback and individualised grammar practice, their pedagogical value for pre-service teachers remains underexplored. Pre-service teachers have a dual role: first, as language learners, and secondly as future instructors who may integrate AI tools into their own classrooms. However, little is known about their use patterns, perceptions, and challenges. Addressing this gap is essential for guiding teacher education programmes in preparing pre-service teachers with the digital and pedagogical literacy needed for the 21st-century classroom.

The study therefore sought to:

1. Examine the extent to which pre-service teachers use AI tools for grammar practice
2. Explore pre-service teachers' perceptions of AI tools in grammar practice
3. Identify the challenges pre-service teachers encounter when using AI tools for grammar practice.
4. Examine gender differences in AI use and perceptions.

Research Questions

The study was guided by the following questions:

1. To what extent do pre-service teachers use AI tools for grammar practice?
2. What are pre-service teachers' perceptions of AI tools in grammar practice?
3. What challenges do pre-service teachers face in using AI tools for grammar practice?

Hypotheses

Based on the objectives, two hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant difference between male and female pre-service teachers in their use of AI tools for grammar practice.
2. There is no significant difference between male and female pre-service teachers in their perceptions of AI tools for grammar practice.

Review of Related Literature

Theoretical Framework

This study is hinged on two theoretical models: The Technology Acceptance Model (TAM) proposed by Davis (1989) and the Self-Regulated Learning (SRL) framework advanced by Zimmerman (2000).

The Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) explains users' acceptance of technological innovations and their behavioural intention to use them. Davis (1989) identified two primary determinants of technology adoption: perceived usefulness (PU), which is the extent to which a user believes that using a system enhances performance and perceived ease of use (PEOU) the degree to which one believes that technology use requires minimal effort. These constructs influence users' attitude toward use and subsequently their behavioural intention (BI), which predicts actual system usage. Later refinements of the model (Venkatesh & Davis, 2000) introduced external variables such as experience, organisational support, and social influence as mediating factors that shape PU and PEOU.

TAM has been widely validated in educational technology research. Studies such as that of King and He (2006) confirmed its robustness through a meta-analysis they conducted, while Teo (2011) demonstrated its predictive power in explaining teachers' adoption of digital tools in instructional contexts. However, the model has also faced

criticism. Bagozzi (2007) and Benbasat and Barki (2007) argued that TAM oversimplifies the complex interplay of pedagogical, cultural, and emotional variables in educational settings. Similarly, Venkatesh and Davis (2000) noted that it underrepresents affective and motivational aspects of technology use. Despite these limitations, TAM remains a valuable framework for understanding the determinants of pre-service teachers' willingness to engage with AI tools for grammar learning, particularly regarding their perceived usefulness and usability of such tools.

The Self-Regulated Learning (SRL) Theory

The Self-Regulated Learning (SRL) theory, proposed by Zimmerman (2000), provides a psychological and pedagogical lens through which learners' autonomous engagement in their own learning can be understood. SRL describes learning as a cyclical process comprising three major phases: forethought, performance, and self-reflection. In the forethought phase, learners set goals and plan their learning activities. During performance, they implement learning strategies and monitor their progress. The self-reflection phase involves evaluating outcomes and making adjust-ments for future learning. This framework underscores the learner's active role in controlling motivation, cognition, and behaviour to achieve specific learning objectives.

SRL has gained broad support among scholars such as Pintrich (2000) and Zimmerman and Schunk (2001), who highlighted its role in developing metacognitive and lifelong learning skills. Hadwin et al. (2011) also found it particularly relevant in online learning contexts, where learners must independently plan and monitor their progress. Nonetheless, the theory has been criticised for assuming a high degree of learner autonomy and metacognitive ability, which may not be uniformly present among students (Winne & Perry, 2000). Boekaerts (1999) further questioned the reliability of self-report measures used to assess SRL processes, while Pajares (2002) cautioned that its individualistic orientation may reflect Western educational values. Despite these concerns, SRL remains instrumental in understanding how pre-service teachers self-manage their learning when using AI-based tools for grammar practice.

Integrating TAM and SRL

The integration of TAM and SRL provides a comprehensive analytical lens for examining both the adoption and learning regulation dimensions of AI-mediated grammar instruction. TAM elucidates the technological acceptance process of how pre-service teachers perceive and decide to adopt AI tools based on usefulness and ease of use. SRL, on the other hand, explains how they engage with these tools through goal setting, self-monitoring, and self-evaluation during grammar learning. The intersection of these models thus bridges the behavioural intention to use AI (from TAM) with the cognitive and metacognitive strategies that sustain its effective pedagogical use (from SRL).

From our standpoint, the complementarity of TAM and SRL is particularly suited to teacher education contexts where pre-service teachers are expected to demonstrate both technological competence and autonomous learning capacity. While TAM captures the determinants of technology acceptance, SRL addresses the quality and depth of learning engagement that follows. Together, they form a dual-layered theoretical foundation that supports an in-depth understanding of pre-service teachers' use of AI tools for grammar practice and its implications for language pedagogy and professional development.

Thus, the Technology Acceptance Model and Self-Regulated Learning theory provide a holistic framework for this study. TAM explains why pre-service teachers accept or reject AI grammar tools, while SRL explains how they regulate and sustain their learning

through these tools. The integration of these theories not only strengthens the explanatory power of the study but also informs teacher education on designing AI-supported learning environments that promote both technological acceptance and autonomous learning competence.

AI Tools in Language Learning

Artificial Intelligence (AI) is increasingly reshaping language learning by providing adaptive, automated, and personalised learning opportunities. Tools such as Grammarly, ChatGPT, and Quillbot offer instant corrective feedback, vocabulary suggestions, and explanations that facilitate learner autonomy in grammar development (Dwivedi et al., 2023; Zou et al., 2023). These AI tools are particularly significant for pre-service teachers, who need not only to improve their own language skills but also to understand how such technologies can be integrated into classroom practice. According to Zawacki-Richter et al. (2019), while AI is widely researched in higher education, there remains a limited focus on its pedagogical role in teacher education. This gap underscores the need to explore how pre-service teachers engage with AI grammar tools.

Artificial Intelligence and Grammar Practice

Grammar remains a foundational component of English language learning. Traditional grammar instruction in Nigeria, however, is often characterized by rote memorization, limited contextual application, and outdated teaching materials. Artificial Intelligence tools can help bridge these pedagogical gaps by offering features like: Gamified interactive learning environments which increase students' engagement and the Scaffolding mechanisms which adapts learners to individual learning speeds and grammar proficiency levels. Immediate, personalized feedback which allows students to understand and correct their mistakes in real time (Holmes et al., 2022). However, scholars caution that over-reliance on AI for grammar correction may hinder deeper language processing and critical thinking (Kasneci et al., 2023). This hindrance highlights the importance of understanding pre-service teachers' experiences with AI tools, as they balance personal grammar improvement with future pedagogical application.

Challenges Pre-Service Teachers Face in the Use of AI Tools for Grammar Practice

In spite of the benefits, studies have reported concerns associated with AI in education, particularly in grammar practice. Pre-service teachers report challenges including occasional inaccuracies in AI feedbacks, over-simplified corrections, and ethical issues such as plagiarism (Holmes et al., 2022; Kasneci et al., 2023). Additionally, over reliance on automated AI tools may undermine pre-service teacher' ability to develop critical language awareness. These challenges indicate that teacher education programmes should provide structured guidance on the effective and ethical use of AI tools, ensuring that pre-service teachers view them as supportive aids rather than complete substitutes for active learning.

The reviewed literature reveals that AI tools hold considerable promise for grammar practice by providing real-time, individualised feedback that enhances accuracy and learner autonomy. The TAM framework explains the acceptance and use of these tools, while SRL theory highlights how learners manage their grammar learning with AI support. Nevertheless, concerns around over-reliance, ethical use, and accuracy present significant considerations. For pre-service teachers, these dynamics are particularly critical, as their experiences with AI tools shape not only their grammar proficiency but also their readiness to integrate AI into future pedagogical practices.

Methodology

The study adopted the descriptive

survey research design. It examined the extent of AI tool usage, perception and challenges faced by pre-service teachers in grammar practice. The survey research design ensures a comprehensive understanding of the measurable outcomes of the study. The population of the study comprise pre-service teachers enrolled in tertiary institutions in Edo State. A sample of 108 (33 male, and 75 female) pre-service teachers took part in the survey. The stratified random sampling technique was used to stratified students into academic levels, 100, 200, 300, and 400 levels. Pre-service teachers in 300 and 400 levels were purposely selected as they have taken part in teaching practice exercise in the 2024/2025 academic session. Pre-service teachers in 300 and 400 levels were randomly selected. However, effort was made to ensure representation across academic level of study, and gender.

One instrument, tagged "Pre-service Teachers' Use of AI Tools for Grammar Practice," was used for data collection. It is made up of four sections, A, B, C, and D. Section A was used to elicit demographic data of participants such as gender and academic level of study. Section B examined the frequency and use of five AI tools by pre-service teachers. Section C examined pre-service teachers' perception of the effectiveness of AI tools in grammar practice. While Section D examined the challenges pre-service teachers face in the use of AI tools for grammar practice. Sections B – D were structured in 4-point Likert format. Section B (Never, Occasionally, Weekly and Daily) and Sections C and D (Strongly Agree to Strongly Disagree). The questionnaire was validated by three language educators from the University of Benin. Data and Ambrose Ali University Ekpoma. A pilot study was conducted with 20 pre-service teachers who were not part of the study to test clarity and reliability. Cronbach's alpha was used to establish the internal consistency of the Likert-scale items and coefficient of 0.86 was obtained.

The researcher and the course advisers for 300 and 400 levels English and Literature programme in the Department of Educational Foundations, Faculty of Education, University of Benin, distributed questionnaire to the pre-service teachers. Data were collected and analysed using descriptive and inferential statistics.

Results

Table 1: Demographic Profile of Participants (N = 108)

Variable	Frequency	Percent (%)
GENDER		
Male	33	30.6
Female	75	69.4
ACADEMIC LEVEL		
300 Level	45	41.7
400 Level	63	58.3

Table 1 shows the demographic profile of the respondents; majority of them were females (N = 75 – 69.4%), while males accounted for (N = 33 – 30.6%). Overall, the demographic distribution reflects a female-majority, final-year dominant sample.

Research Question One: To what extent do pre-service teachers use AI tools for grammar practice?

Table 2: Frequency of Pre-service Teachers' Use of AI Tools for Grammar Practice (N =108)

S/N	AI Tool	Daily (%)	Weekly (%)	Occasionally (%)	Never %)	Mean	SD
1	Grammarly	20 (18.5)	24 (22.2)	35 (32.4)	29 (26.9)	2.32	1.07
2	QuillBot	2 (1.9)	26 (24.1)	18 (16.7)	62 (57.4)	1.70	0.90
3	ChatGPT	45 (41.7)	25 (23.1)	38 (35.2)	0 (0.0)	3.06	0.88
4	Duolingo	11 (10.2)	11 (10.2)	40 (37.0)	46 (42.6)	1.88	0.96
5	Write & improve	17 (15.7)	18 (16.7)	14 (13.0)	59 (54.6)	1.94	1.16
	Overall Mean/SD					**2.18**	**0.64**

The results in Table 2 indicate that ChatGPT was the most frequently used AI tool, with 41.7% of pre-service teachers reporting daily use and none indicating they had never used it (Mean = 3.06, SD = 0.88). Grammarly was also widely adopted, with 18.5% daily users (Mean = 2.32, SD = 1.07). By contrast, QuillBot (Mean = 1.70, SD = 0.90), Duolingo (Mean = 1.88, SD = 0.96), and Write & Improve (Mean = 1.94, SD = 1.16) were less frequently used, with over 40% of respondents indicating they never used these tools. The overall mean usage score across all tools was (Mean = 2.18, SD = 0.64), suggesting that while AI tools are being integrated into grammar practice, intensity of use varies considerably by tool.

Research Question Three: What are pre-service teachers' perceptions of AI tools in grammar practice?

Table 3: Pre-service Teachers' Perceptions of AI Tools in Grammar Practice (N = 108)

s/n	Statement	Agree	Disagree	Mean	Std Dev.
1	AI tools help me understand English grammar better.	92 (85.1%)	16 (14.9%)	3.04	.640
2	I find AI feedback on grammar errors useful.	93 (86.1%)	15 (13.9%)	3.00	.684
3	Using AI tools motivates me to practice grammar more frequently.	85 (75.7%)	23 (21.3%)	3.02	.723
4	I trust the accuracy of AI grammar suggestions.	65 (60.2%)	43 (39.8%)	2.69	.716
5	I can apply grammar rules better after using AI tools.	86 (79.7%)	22 (20.4%)	2.83	.663
6	AI tools save my time in grammar practice.	87 (80,6%)	21 (19.4%)	2.98	.611
	Overall Mean/SD			**2.93**	**.381**

The findings in Table 3 reveal generally positive perceptions of AI tools. The majority of the participants agreed that AI tools help them understand grammar better (85.1%) and that AI feedback on grammar errors is useful (86.1%). Similarly, 80.6% felt that AI tools save time, and 75.7% reported that using AI motivates them to practice grammar more often. However, trust in the accuracy of AI suggestions was more mixed, with only 60.2% agreeing and 39.8% disagreeing. The overall mean perception score (Mean = 2.93, SD = 0.38) suggests a generally favourable perception toward AI tools in grammar practice.

Research Question Three: What challenges do pre-service teachers face in using AI tools for grammar practice?

Table 4: Challenges Pre-Service Teachers Face in the use of AI Tools for Grammar Practice

s/n	Challenges	SA	A	D	SD	Mean	Std. Dev.
1	Lack of internet access	29 (26.9%)	52 (48.1%)	25 (23.1%)	2 (1.9%)	3.00	.761
2	Inability to afford premium AI tools	38 (35.2%)	44 (40.7%)	19 (17.6%)	7 (6.5%)	3.05	.890
3	Inaccurate grammar suggestions	6 (5.6%)	35 (32.4%)	56 (51.9%)	11 (10.2%)	2.33	.736
4	Lack of training on how to use AI tools	8 (7.4%)	37 (34.3%)	56 (51.9%)	7 (6.5%)	2.43	.726
5	Poor device access (e.g. no smartphones, PCs)	29 (26.9%)	35 (32.4%)	33 (30.6%)	11 (10.2%)	2.76	.965
	Overall Mean/SD					**2.71**	**.504**

Table 4 shows that the most reported challenges were inability to afford premium AI tools (M = 3.05, SD = 0.89) and lack of internet access (M = 3.00, SD = 0.76), with over 70% of participants agreeing or strongly agreeing to these. Poor device access (M = 2.76, SD = 0.97) was also a notable challenge. By contrast, fewer participants identified inaccurate grammar suggestions (M = 2.33, SD = 0.74) and lack of training (M = 2.43, SD = 0.73) as major barriers. The overall mean score (M = 2.71, SD = 0.50) suggests that while challenges are evident, they vary in intensity, with financial and infrastructural barriers being the most prominent.

Hypothesis One: There is no significant difference between male and female pre-service teachers in their use of AI tools for grammar practice.

Table 5: Independent Samples t-test on Gender Differences in AI Use for Grammar Practice

	Sex	N	Mean	Standard Deviation	df	t	Sig (2-tailed)	Result
AI Use	Male	33	2.24	0.581	106	0.588	.558	Retained
	Female	75	2.16	0.667				

Table 5 shows the independent samples t-test that was conducted to examine gender differences in pre-service teachers' use of AI tools for grammar practice. Results indicated no significant difference between male (Mean = 2.24, SD = 0.58) and female students (Mean = 2.16, SD = 0.67), $t(106) = 0.59$, $p = .56$. Therefore, the null hypothesis was retained, suggesting that gender does not play a significant role in the frequency of AI use among pre-service teachers.

Hypothesis Two: There is no significant difference between male and female pre-service teachers in their perceptions of AI tools for grammar practice.

Table 6: Independent Samples t-test on Gender Differences in Pre-Service Teachers' Perception of AI Tools

	Sex	N	Mean	Standard Deviation	df	t	Sig (2-tailed)	Result
Perception of AI Use	Male	33	2.24	0.581	106	0.588	.558	Rejected
	Female	75	2.16	0.667				

Table 6 presents the independent samples t-test that was conducted to examine gender differences in pre-service teachers' perceptions of AI tools for grammar practice. Results revealed a significant difference between male students (M = 3.11, SD = 0.47) and female students (M = 2.85, SD = 0.30), $t(106) = 3.49$, $p = .001$. The null hypothesis was therefore rejected, indicating that male pre-service teachers reported significantly more positive perceptions of AI tools than their female counterparts.

Discussion

The findings of the study provide insights into pre-service teachers' use of AI tools for grammar practice, their perceptions, and the challenges they face. The results are discussed in line with the research questions and hypotheses.

The gender distribution shown in the study aligns with earlier studies on teacher education programmes in Nigeria, where female students tend to dominate in education faculties (Owolabi & Adedayo, 2021). The gender imbalance may also influence the findings of the study, particularly regarding perceptions, since prior research has shown that female students often demonstrate different levels of technology adoption compared to their male counterparts (Adeleke, 2022). In terms of academic level, 58.3% were in 400 level, while 41.7% were in 300 level. This suggests that the respondents were predominantly in the final year of their programme. This is significant, as 400-level students are likely to have had greater exposure to both teaching practice and technology-enhanced learning resources compared to their 300-level peers. Previous studies (Eze, 2020; Yusuf & Folorunso, 2021) confirm that academic level can affect students' confidence and engagement with digital tools, which may explain variations in the intensity of AI tool use reported in this study.

The results of research question one revealed that ChatGPT and Grammarly were the most frequently used tools, while QuillBot, Duolingo, and Write & Improve were less commonly utilised. This suggests that pre-service teachers are more drawn to AI tools that provide direct, interactive, and user-friendly feedback. In line with TAM (Davis, 1989), the frequent use of ChatGPT may be attributed to its perceived ease of use and usefulness in providing immediate feedback on grammar. Grammarly's popularity also aligns with this model, as previous studies have highlighted its effectiveness in supporting grammar correction and writing improvement (Odewumi & Ogunlade, 2023; Li, 2022).

These findings align with Alharbi (2023), who found that university students preferred AI-based writing tools that were more accessible and integrated into their academic tasks. On the other hand, the limited use of Duolingo and Write & Improve reflects earlier findings that language learners often bypass applications perceived as less tailored to academic needs (Yusufu & Lawal, 2022).

Research question two examined the issue of pre-service teachers' perception about AI tools. Pre-service teachers expressed generally positive perceptions of AI tools, particularly regarding their ability to enhance grammar understanding, provide useful

feedback, and motivate more frequent practice. These perceptions align with TAM's constructs of perceived usefulness and perceived ease of use (Davis, 1989), which influence technology acceptance. Furthermore, Zimmerman's (2002) SRL theory helps explain how AI tools can foster autonomy and motivation, as learners can set goals, monitor progress, and adjust strategies based on AI feedback.

This finding corroborates that of Adebayo and Ojo (2023) who reported that Nigerian undergraduates value AI feedback for improving writing accuracy and confidence. Similarly, Li and Luo (2023) found that AI-powered feedback enhanced learner motivation and engagement in grammar practice. However, the mixed perceptions about the accuracy of AI grammar feedback suggestions reflect findings by Mhlongo (2023), who noted that learners sometimes distrust AI corrections, especially when cultural or contextual nuances are overlooked.

Research question three examined the challenges pre-service teachers face in the use of AI tools. In spite of positive perceptions, challenges abound. Financial and infrastructural barriers, such as the inability to afford premium AI tools and lack of internet access, were the most prominent. These findings are consistent with studies in developing countries contexts, where digital divides hinder effective integration of educational technologies (Okonkwo & Adeyemi, 2022; UNESCO, 2023). Poor device access further highlights structural inequalities that limit pre-service teachers' ability to fully exploit AI opportunities.

In contrast, challenges such as inaccurate suggestions and lack of training were rated less strongly, though still relevant. This contrasts with findings from more technologically advanced settings, where training and accuracy concerns often dominate (Ghosh & Majumdar, 2022). In Nigeria, however, infrastructural and financial limitations remain the primary barriers, echoing Ajani (2021), who identified affordability and connectivity as major impediments to digital adoption in teacher education.

Hypotheses one and two examined gender difference in AI use and perceptions. Interestingly, this study found no significant gender difference in AI use, but male pre-service teachers reported significantly more positive perceptions of AI tools compared to females. This suggests that while both genders access AI tools at similar rates, male students may perceive greater usefulness or ease of use, key determinants in TAM (Davis, 1989).

This finding aligns with Alharbi (2023), who noted that male learners often demonstrate stronger confidence in adopting emerging technologies in higher education contexts. Similarly, Ogunyemi and Ojo (2022) observed that Nigerian male students exhibited more favourable attitudes toward digital learning platforms than females, attributing this to greater self-efficacy and exposure. On the other hand, the absence of gender differences in actual use reflects trends identified by Okonkwo and Adeyemi (2022), who argued that once infrastructural access is controlled, both male and female learners tend to use digital tools at comparable levels.

From an SRL perspective (Zimmerman, 2002), male pre-service teachers may be more self-directed in leveraging AI tools for grammar practice, whereas female learners may approach such tools more cautiously due to accuracy concerns. This interpretation mirrors Mhlongo's (2023) finding that female students are more likely to question AI-generated corrections, highlighting the importance of trust in technology adoption.

Conclusion

This study investigated pre-service teachers' use of AI tools for grammar practice, their perceptions, challenges, and gender differences in use and perception. Findings revealed that ChatGPT and Grammarly were the most frequently used AI tools, reflecting their perceived ease of use and direct

applicability to academic writing tasks. Pre-service teachers generally held positive perceptions of AI tools, acknowledging their usefulness in understanding grammar, receiving feedback, and motivating practice. However, infrastructural and financial barriers, such as poor internet access, limited device ownership, and inability to afford premium versions, significantly constrained effective utilisation.

In terms of gender differences, no significant variation was found in the actual use of AI tools, suggesting equal access across male and female pre-service teachers. However, male students demonstrated significantly more positive perceptions of AI tools compared to females, indicating a perceptual gap in technology acceptance. This highlights the role of individual attitudes and self-efficacy in shaping engagement with AI for grammar learning.

Overall, the study underscores the growing relevance of AI in language learning, while drawing attention to systemic challenges and gender-based perceptual differences that need to be addressed for equitable adoption.

Recommendations

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

1. Teacher-training institutions should provide institutional subscriptions or campus-based access to premium AI grammar tools, thereby reducing financial barriers for pre-service teachers.
2. Stakeholders, including government and private partners, should address challenges related to internet connectivity and device availability to bridge the digital divide that limits equitable AI integration.
3. Structured workshops should be organised to familiarise pre-service teachers with effective ways of using AI tools, thereby addressing concerns about inaccuracy and building user confidence across genders.
4. Since male students showed more positive perceptions, teacher-education programmes should design strategies that particularly encourage female learners to build trust and confidence in AI tools. Mentorship, peer collaboration, and gender-inclusive digital literacy programmes may help close this perceptual gap.
5. Artificial Intelligence tools should be integrated into language and grammar instruction within teacher education curricula, ensuring that their use is aligned with pedagogical goals rather than left to individual experimentation.

Implications for Policy and Future Research

The findings of this study carry significant implications for policy, practice, and further research. At the policy level, the integration of AI tools into teacher education requires deliberate investment in digital infrastructure and affordable access to AI-supported platforms. National education policies should prioritise partnerships with technology providers to reduce costs and enhance access for pre-service teachers. Addressing affordability and connectivity issues will ensure that AI-enhanced learning does not widen existing educational inequalities.

For practice, the study highlights the need for gender-sensitive interventions. Since male pre-service teachers reported more positive perceptions of AI tools, training programmes should incorporate strategies to build female students' confidence in AI adoption. This would promote equity and ensure that both genders benefit equally from technological innovations in grammar learning.

Future research should expand the scope of inquiry by incorporating objective measures of grammar proficiency alongside self-reported perceptions. Longitudinal studies may also provide insights into how sustained AI tool use influences grammar mastery over

time. Comparative studies across states and geo-political zones in the countries could further clarify how infrastructural, cultural, and policy contexts shape AI adoption in language education. Additionally, qualitative studies may help uncover the nuanced reasons behind gender differences in perceptions, providing richer insights into learners' experiences.

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Artificial Intelligence: A World Order for Yorùbá Language Pedagogical Activities and Domestication

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Abstract

The integration of Artificial Intelligence (AI) in the teaching and preservation of Nigerian indigenous languages presents an innovative path to revitalizing linguistic heritage in a digitally evolving world. With over 500 languages spoken across Nigeria, many face the threat of extinction due to globalization, urbanization, and generational language loss. AI technologies offer scalable, interactive, and personalized solutions to support language instruction, documentation, and preservation. Through mobile applications such as chatbots and AI-powered digital assistants, learners can access contextualized language content, pronunciation guides, and real-time conversational practice. Furthermore, AI algorithms enable the creation of vast, structured linguistic databases that support automatic translation, transcription, and sentiment analysis of indigenous content. This paper explored how AI-driven tools such as speech recognition systems, intelligent tutoring platforms, natural language processing (NLP), and voice synthesis can be harnessed to create immersive, culturally relevant pedagogical experiences. It also addressed critical challenges, including data scarcity, dialectal diversity, ethical concerns, and the risk of cultural homogenization. Lastly, the paper emphasizes the importance of inclusive development with involvement of native speakers, linguists, and educators in co-creating AI solutions to ensure linguistic authenticity for immediate and future relevance and community ownership for sustainable solutions.

Keywords: Artificial intelligence, Yorùbá language, language extinction, pedagogy, domestication

1.0 Introduction

The 21st century has ushered in a digital revolution that has redefined global education. For many indigenous languages, such as Yorùbá, spoken across southwestern Nigeria with a population of over 30 million speakers (NBS 2020), and by diaspora communities worldwide, there is an urgent need to adapt to these transformations. Despite being a major Nigerian language, Yorùbá is underrepresented in digital education tools. However, the global dominance of English and other major languages has marginalized many indigenous languages, including Yorùbá. The technological advancements in Artificial Intelligence (AI) have provided a new frontier for the domestication, revitalization, and pedagogical transformation of the Yorùbá language.

2.0 Conceptual Clarifications

2.1 Artificial Intelligence (AI)

The term ‘artificial intelligence’ was first used at a 1956 workshop held at Dartmouth College, a US Ivy League university, to describe the "science and engineering of making intelligent machines, especially intelligent computer programs" (McCarthy et al., 2006, in UNESCO, 2021). Artificial Intelligence is a booming technological domain capable of altering every aspect of our social interactions (UNESCO, 2019). In summary, it is safe to say that AI is a computer system designed to mimic human cognitive functions such as learning, problem-solving, and language understanding. It has become a world order where every nation has invested hugely so as to be in tune with what is phenomenological around the world, especially in the education field.

However, there are a lot of challenges

associated with the use of AI, especially in the education field, in aligning it with indigenous language (Yorùbá) teaching and domestication. Albeit, we cannot in any way be oblivious of the fact that no matter how disadvantageous a phenomenon may be, the little advantages derivable may go a long way to assist the propagation, a case of artificial intelligence.

2.2 Language Extinction, Urbanization, and Globalization

Language extinction, according to Crystal (2000) occurs when "the last known speaker of a language dies, and no new generation speaks it, resulting in the permanent loss of the language from human use." This definition emphasizes both the loss of speakers and the cessation of intergenerational transmission, which linguists regard as the key indicators of language extinction. Urbanisation, on the other hand, may lead to language shift, modification, and codification of vocabularies associated with the language. It presents both challenges and opportunities for the Yorùbá language. While it can lead to language shift and dialect loss, it also fosters new hybrid forms and urban creativity. The balance between modernization and heritage preservation will determine the Yorùbá's future vitality in Nigeria's growing cities.

Ojo et. al. (2017) explore how global forces such as economic, technological, and cultural reshape African languages, including Yorùbá. While they could not offer a one-line definition of language globalization, the analysis given summarises the implications of it on the Yorùbá language as follows:

Language globalization refers to the process by which global interconnectedness through migration, media, education, and digital communication affects the status, usage, and dissemination of local languages like Yorùbá, often leading to new linguistic practices, hybrid forms, and shifts in function.

In simpler terms, globalization impacts Yorùbá by expanding its reach beyond native regions, altering how it is taught and used, and introducing hybridization through contact with global languages like English.

2.3 Pedagogical Activities

Richards & Schmidt (2010) define pedagogical activities as "structured tasks, exercises, and techniques used by teachers to promote learning in a planned instructional setting." These activities are designed with explicit educational objectives and align with curriculum goals. Brown (2007) explains further that pedagogical activities are interactive, learner-centered engagements that encourage students to process, apply, and reflect on new knowledge within meaningful contexts. These activities foster active participation and skill application rather than passive reception. In adapting the definitions to teaching of Yorùbá language, it may involve teaching Yorùbá proverbs, where students work in small groups to match each proverb with its correct cultural meaning, then present how it applies to a real-life situation. It may allow a Yorùbá language teacher to use role-playing to simulate a market conversation, helping students practice transactional vocabulary and cultural expressions.

2.3 Language Domestication

In a layman's definition, language domestication can be said to be a local adaptation and integration of foreign technologies or practices to suit indigenous contexts. Whereas Venuti (1995) and Matricciani (2025) share the same view on *language domestication* as a translation strategy. In this situation, the target text is adapted to the linguistic and cultural norms of the target audience, making it appear as if it were originally written in that language. This approach minimizes foreign elements to enhance familiarity and readability.

In summary, AI can be used to domesticate the Yorùbá language by leveraging its ability to adapt, reframe, and contextualize content so that it reflects Yorùbá cultural norms, idioms, worldview, and communicative

styles even when the source material is from another language or global context.

3.0 Theoretical Frameworks

3.1 Sociocultural Theory

Vygotsky (1970) developed Socio-cultural Theory mainly in the early 1930s, but it was first published posthumously in 1934 in his book *"Thought and Language"* (also translated as *"Thinking and Speech"*). The theory emphasizes the fundamental role of social interaction and culture in the development of cognition. Unlike Piaget, who saw development as an individual process that precedes learning, Vygotsky argued that cognitive growth is largely shaped by cultural tools, language, and social experiences, with learning driving development.

Core Principles

(i) Social Interaction as a Catalyst for Learning

Learning is first experienced on a social plane before being internalized at the individual level. Knowledge is co-constructed through interactions with more knowledgeable others (MKOs) such as teachers, peers, or parents.

(ii) The Zone of Proximal Develop-ment (ZPD)

The ZPD refers to the gap between what a learner can do independently and what they can achieve with guidance or collaboration. Instruction is most effective when it targets this zone, enabling students to perform beyond their current capabilities.

(iii) Scaffolding

Scaffolding is the temporary support provided by MKOs to help learners accomplish tasks within their ZPD. Over time, these supports are withdrawn as learners become more independent.

(iv) Cultural Tools and Mediation

Cognitive development is mediated by cultural tools, both physical (e.g., books, technology) and psychological (e.g., language, symbols). Language, in particular, is the most important tool, shaping thought processes and enabling higher mental functions.

(v) Language and Thought

Vygotsky highlighted the transition from social speech (communication with others) to private speech (self-guidance) and eventually to inner speech (internalized thought). This progression reflects the internalization of external dialogues.

Educational Implications

(i) Collaborative Learning: It encourages group work and peer-assisted learning.
(ii) Differentiated Support: It fosters tailored instruction to learners' ZPD.
(ii) Cultural Relevance: This incorporates learners' cultural backgrounds into teaching materials.
(iv) Interactive Dialogue: It allows the use of questioning and discussion to mediate learning.

3.2 Digital Justice Theory

Neil Selwyn's (2011) Digital Justice Theory is a framework that examines issues of fairness, equity, and ethics in the context of digital technology use in education and society. It moves beyond simple concerns about access to devices and the internet ("digital divide") and instead focuses on the deeper social, cultural, and political dimensions of digital participation. The theory emphasizes that true digital equality requires not just the provision of technology, but also ensuring that all individuals have the capability, opportunity, and agency to use digital tools meaningfully.

Core Principles

(i) Beyond Access

Digital justice will not be achieved merely by providing hardware or connectivity. Equity requires ensuring that users can effectively engage with, create, and benefit from digital technologies.

(ii) Participation and Empowerment
The focus is on enabling individuals, particularly marginalized groups, to participate actively in digital environments as producers of content and knowledge, not just as consumers.
(iii) Critical Digital Literacy
Digital justice involves developing the skills to question, critique, and shape digital systems, understanding power relations, privacy issues, and algorithmic biases.
(iv) Structural Inequalities
Technology use is shaped by broader social structures such as economic inequality, educational opportunity, gender, race, and language differences, which must be addressed for genuine justice.
(v) Democratic Engagement
A digitally just society fosters open participation, transparency, and the use of technology for civic engagement and social change.
Educational Implication
(i) Curriculum Design: It integrates critical digital literacy into teaching, helping students navigate and shape digital spaces.
(ii) Equity-Oriented Policies: It addresses barriers such as affordability, accessibility for physically-challenged users, and culturally relevant content.
(iii) Participatory Learning Environments: It promotes co-creation of digital resources and collaborative online learning.
(iv) Teacher Development: Educators are equipped with skills to mentor students in both technical and critical digital competencies.

Summarily, Vygotsky's Sociocultural Theory reframes learning as a socially mediated process deeply embedded in cultural contexts, with emphasis on language learning. By recognizing the power of collaboration, guided support, and cultural tools, which are expected to shape contemporary approaches to education, especially in cooperative learning and culturally responsive pedagogy. Additionally, Digital Justice Theory emphasizes digital equity as a matter of rights, capabilities, and social justice. It calls for educational systems and policymakers to go beyond providing access, ensuring that all individuals have the skills, confidence, and socio-cultural conditions to participate fully and critically in the digital world.

4.0 Global Trends in AI and Promotion of Indigenous Languages, Yorùbá as a Case Study

The rapid evolution of Artificial Intelligence (AI) has opened new pathways for the preservation, revitalization, and promotion of indigenous languages worldwide. Global trends indicate a growing emphasis on language technology, which includes Natural Language Processing (NLP), speech recognition, machine translation, and AI-driven content creation tailored to underserved and endangered languages. Initiatives by organizations such as UNESCO and the African Union align with the UN's *International Decade of Indigenous Languages (2022–2032)*, underscoring AI's potential in safeguarding linguistic diversity.
For Yorùbá, one of the most widely spoken indigenous languages in South West Nigeria, with over 30 million native speakers, AI tools have emerged to assist the revitalization of the language. The following are some of the AI platforms that are globally trending in the promotion of languages:

(i) Speech-to-text and Text-to-speech systems capable of accurately handling Yorùbá tonal patterns.
(ii) Machine Translation models that integrate Yorùbá with high-resource languages like English and French.
(iii) Digital learning platforms employing adaptive AI to teach Yorùbá to diaspora communities.
(iv) Cultural content generation where AI is trained on Yorùbá literature, proverbs, and oral traditions to produce culturally authentic outputs.

These developments mirror broader AI

efforts for other indigenous languages, such as Māori, Quechua, and Inuktitut, where technology is both a preservation and modernization tool.

5.0 Comparative Table of AI Tools Supporting Yorùbá

The table below presents a comparison of existing AI tools based on their features, limitations, and level of Yorùbá language integration.

S/N	AI Tool	Functionality	Yorùbá Support Level	Limitations
1	Google Translate	Text translation	Basic (literal translations)	Lacks contextual and idiomatic understanding
2	Duolingo	Gamified learning	None	Yorùbá is not yet supported
3	ChatGPT	Conversational learning	Intermediate (via prompts)	Dependent on training data and user input
4	Yorùbá101 App	Mobile Yorùbá lessons	High	Limited AI integration
5	AI Yorùbá TTS	Text-to-speech in Yorùbá	Moderate	Limited voice quality and tone variety
6	Lesson notes in Yorùbá	Mobile Yorùbá lessons notes on some subjects	Basic (literal translation)	It lacks the use of proper Yorùbá orthography and translation of words
7	Yorùbá Dictionary	Mobile app for compilation of thousands of Yorùbá words with corresponding English translation, with infusion of synonyms, antonyms, etc	High (it involves pre-installed information)	The audio pronunciation of some words needs to be checked for proper auditory alignment.
8	Yorùbá Tutor	Mobile app for learning basic greetings and some common words with audio and quizzes	Beginner	The app needs to be developed further to allow intermediate and advanced learners the opportunity to learn.
9	Learn the Yorùbá Language	Mobile app designed for learning basic words arranged in different topics	Beginner and intermediate	Little errors discovered.
10	English to Yorùbá Translator I	A dictionary application that translates English words to Yorùbá.	Beginner and Intermediate	Orthographic and translation errors

All these are efforts of some people towards domestication and pedagogical engagement of students in learning the Yorùbá language via mobile applications and AI generative platforms. A few limitations were noticed, and we believe that if more efforts are directed towards the improvement of all the aforementioned apps, they will be appreciated and applauded.

6.0 Roles of AI in Yorùbá Language Pedagogy and Domestication

Artificial Intelligence (AI) is emerging as a transformative force in the teaching,

preservation, and cultural adaptation of indigenous languages such as Yorùbá. AI-driven tools are now enabling more effective pedagogy by enhancing accessibility, personalization, and cultural relevance. In Yorùbá language pedagogy, AI supports intelligent tutoring systems that adapt to learners' pace and proficiency, thereby aligning with differentiated instruction principles (Zawacki-Richter et al., 2019).

Tools such as AI-powered speech-to-text and text-to-speech systems help learners master Yorùbá orthography and tonal pronunciation, which are essential for meaning differentiation in the language.

In terms of language domestication, AI offers opportunities to adapt global concepts, technologies, and expressions into culturally resonant Yorùbá equivalents. For example, AI-based machine translation models can be trained to replace foreign idioms with Yorùbá proverbs, ensuring that meaning is preserved while maintaining cultural authenticity.

Furthermore, AI can enhance digital archiving of Yorùbá literature, folklore, and oral traditions, ensuring that younger generations have access to authentic cultural content. Cultural content generation algorithms, such as large language models trained on Yorùbá corpora, can produce poems, plays, and instructional materials embedded with the Yorùbá worldview and traditional epistemologies. By merging pedagogy with domestication processes, AI not only supports language acquisition but also reinforces the cultural identity of Yorùbá speakers in an increasingly globalised world.

7.0 Challenges and Ethical Considerations

The integration of Artificial Intelligence (AI) into Yorùbá language promotion presents opportunities for revitalization, education, and global visibility. However, it also raises important technical, social, and ethical challenges that must be addressed to ensure cultural sensitivity and linguistic integrity.

7.1 Challenges

(i) Data Scarcity and Quality

High-performing AI models require large, high-quality Yorùbá language datasets. Many available corpora are fragmented, inconsistent in orthography, or lack tonal markers essential for correct meaning. For example, missing tonal marks can change "ọ̀kọ̀" (husband) to "ọkọ" (vehicle), causing semantic errors in translations.

(ii) Technological Bias

AI models trained predominantly on English or other dominant languages risk embedding Western cultural and linguistic norms, leading to the marginalization of Yorùbá expressions. This can result in literal translations that ignore idiomatic or culturally bound expressions.

(iii) Dialectal Variation

Yorùbá has multiple dialects (e.g., Oyo, Ijebu, Ekiti, Egba), and AI tools may over-represent one, reducing inclusivity and accuracy.

(iv) Limited Funding and Infrastructure

Many AI language projects are concentrated in developed countries, leaving African indigenous language initiatives underfunded and dependent on foreign tech infrastructure.

(v) Sustainability

Long-term maintenance of Yorùbá AI tools (e.g., translation apps, speech recognizers) requires constant updates, which can be challenging without sustained financial and community support.

7.2 Ethical Considerations

(i) Cultural Preservation vs. Technological Simplification: AI systems must avoid "flattening" Yorùbá's cultural richness to fit into simplified computational models, which risks cultural erosion.

(ii) Ownership and Intellectual Property:

Questions arise about who owns Yorùbá language datasets — the community, researchers, or tech companies — especially when cultural heritage is monetized.

(iii) Consent and Community Involvement: Local speakers and cultural custodians should be part of AI tool development to ensure accuracy, authenticity, and ethical use of language resources.

(iv) Bias and Representation: AI must fairly represent all dialects, age groups, and sociolects to avoid reinforcing linguistic inequalities within Yorùbá-speaking communities.

(v) Privacy and Data Protection: AI-powered speech recognition or text collection tools must safeguard the privacy of Yorùbá speakers, especially in educational or governmental contexts.

While AI offers transformative potential for Yorùbá language promotion, its deployment must balance technological innovation with cultural preservation, inclusivity, and ethical responsibility. Success will depend on community collaboration, ethical data practices, and culturally aware AI design.

8.0 Policy Implications and Recommendations

The adoption of Artificial Intelligence (AI) in Yorùbá language pedagogy and domestication presents both opportunities and governance challenges. The policy landscape must address curriculum integration, cultural preservation, technological equity, and ethical deployment to maximize benefits and minimize risks.

(i) Curriculum Alignment: AI-assisted Yorùbá teaching tools must align with the National Policy on Education (NPE) and existing Yorùbá language syllabi at primary, secondary, and tertiary levels. Policies should ensure AI applications incorporate intonation, tonal markings, and cultural contexts to maintain authenticity.

(ii) Data Governance and Ownership: Policymakers must define intellectual property rights over Yorùbá AI datasets, ensuring communities retain control over linguistic resources.

(iii) Standardization and Dialect Inclusion: National language policy should enforce multi-dialectal representation in AI models to avoid marginalizing less-dominant Yorùbá variants.

(iv) Funding and Infrastructure: Government and private sectors must create funding streams for AI-driven Yorùbá projects, including server infrastructure and research grants.

(v) Ethics and Cultural Preservation: Policies must establish AI ethics boards to review Yorùbá-focused AI tools, ensuring they do not dilute linguistic identity through over-domestication.

9.0 Recommendations

(i) Establish AI-Yorùbá Language Research Centers: Create specialized institutes under the Ministry of Education and the National Universities Commission to lead AI-Yorùbá innovation.

(ii) Public–Private Partnerships (PPPs): Encourage collaboration between Nigerian tech startups, Yorùbá cultural institutions, and global AI firms to co-develop tools such as speech recognition, translation, and interactive learning platforms.

(iii) Capacity Building for Educators: Organize AI literacy training for Yorùbá language teachers to enable effective classroom use of AI-powered pedagogical tools.

(iv) Community-Sourced AI Datasets: Implement crowd-sourced Yorùbá corpus projects, involving native speakers in creating audio, text, and video datasets.

(v) AI-Integrated Curriculum Pilots: Launch pilot programs in select Yorùbá-speaking states (e.g., Lagos, Oyo, Osun) to test AI-enhanced teaching modules before nationwide roll-out.

(vi) Legislative Protection of Indigenous AI: Pass laws preventing unauthorized commercial

exploitation of AI-trained Yorùbá language models without community consent. The government must be intentional in driving this project.

(vii) Evaluation and Continuous Improvement: Implement feedback loops to update AI tools with new vocabulary, cultural expressions, and evolving usage patterns.

(viii) Language Engineering Conference: Before AI-trained Yorùbá models can be said to be functional and realistic, linguists and non-linguist (native-speaker) scholars must come together to coin appropriate words associated with the digital space and other fields.

For AI to truly serve Yorùbá language pedagogy and domestication, policy frameworks must be proactive, inclusive, and culturally grounded. This requires coordinated action among government agencies, educators, technologists, and Yorùbá-speaking communities to ensure AI becomes a tool for linguistic empowerment rather than cultural erosion.

Lastly, UNESCO (2019) has comprehensive recommendations for any country that wants to delve into the application of AI in education. The document was written in six languages for a wider audience. It is worth reading for a better understanding of the importance of AI in education.

10.0 Conclusion

The integration of Artificial Intelligence into Yorùbá language pedagogy and domestication represents a transformative shift in how indigenous languages can be taught, preserved, and revitalized in the 21st century. As global trends in AI continue to redefine educational and cultural landscapes, Yorùbá stands at the threshold of unprecedented opportunities for innovation in teaching methods, linguistic documentation, and cultural transmission.

Through AI-powered tools, ranging from intelligent tutoring systems, automated translation, and speech recognition, to culturally adaptive content generation, educators and learners can engage with Yorùbá in more interactive, personalized, and contextually relevant ways. These advancements not only enhance linguistic competence but also safeguard the unique cultural expressions embedded in Yorùbá literature, oral traditions, and proverbs.

However, realizing this potential requires deliberate policies, ethical safeguards, and community-driven engagement to ensure that AI does not erode but rather strengthens the authenticity of the language. Collaborative efforts between technologists, linguists, educators, and Yorùbá-speaking communities will be crucial in creating AI solutions that reflect the richness, diversity, and evolving nature of the language.

Ultimately, Artificial Intelligence can become a world order in Yorùbá language pedagogy and domestication. In this order, technology serves as both a bridge to global innovation and a shield for cultural heritage. If strategically implemented, AI will not merely assist in teaching Yorùbá; it will enshrine it as a living, adaptive, and globally respected language for generations to come.

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Artificial Intelligence (AI) and Language Education in the 21st Century

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Abstract

This article explores the transformative role of Artificial Intelligence (AI) in language education, with emphasis on ChatGPT. AI technologies such as Intelligent Tutoring Systems (ITS), Natural Language Processing (NLP), and Machine Learning support adaptive instruction, conversational practice, and personalised learning. Among these, the paper focuses on ChatGPT idue to its ability to simulate human-like conversations, provide contextual explanations, and foster vocabulary, grammar, and communicative competence. Using the COST model as a framework, the paper shows how ChatGPT mediates interactions with content, tasks, others, and self, thereby promoting engagement, reflection, and learner autonomy. The benefits of ChatGPT include interactive practice, expert guidance, content generation, and formative feedback. However, challenges such as data quality, ethical concerns, technological limitations, and cost implications must be addressed. The paper concludes that while ChatGPT holds strong potentials to enhance language learning, its integration into education requires careful planning and critical reflection.

Keywords: artificial intelligence, ChatGPT, chatbots, language learning, COST model

Introduction

Artificial Intelligence (AI) has ushered in a new era of innovation across sectors, including education. The term AI, coined by John McCarthy in 1955, describes machines designed to exhibit behaviours typically associated with human intelligence (McCarthy et al., 1955). Kurzweil (1990) extended this idea, describing AI as the art of creating machines capable of performing tasks requiring human-level intelligence. Although these early definitions of AI date back many decades, they present a useful starting point for defining it. Present day scholars are of the view that AI is not inherently "intelligent," but as systems capable of replicating aspects of human cognition with varying degrees of success (Chiu et al., 2022; Mertala et al., 2022).

Artificial Intelligence and Language Learning

AI technologies offer powerful tools with the potential to transform language education. AI applications can be broadly grouped into three domains: Intelligent Tutoring Systems (ITS), Natural Language Processing (NLP), and Machine Learning algorithms (Luckin et al., 2016; UNESCO, 2023).

- **ITS** provides adaptive instruction and personalised feedback.
- **NLP** enhances communicative competence through speech recognition and chatbot-based dialogue.
- **Machine Learning** enables personalised learning pathways and predictive analytics.

Collectively, these applications foster efficiency, engagement, and learner autonomy, ultimately promoting higher language proficiency.

Table 1: Applications of Artificial Intelligence in Language Learning

AI Technology	Application	Description / Examples
Intelligent Tutoring Systems (ITS)	AI-driven Feedback	Provides instant, personalised feedback on grammar, vocabulary, and writing tasks.
	Chatbots & Virtual Tutors	Offers conversation practice with AI-powered chatbots; virtual tutors simulate real-life speaking and listening scenarios (e.g., Duolingo bots).
	Adaptive Learning	Adjusts lesson content to learner's proficiency level and progress for more efficient learning.
Natural Language Processing (NLP)	Speech Recognition	Supports pronunciation practice through real-time feedback (e.g., Google Assistant, Siri).
	Conversational Chatbots	Enables simulated dialogues with AI partners, enhancing fluency and interaction (e.g., Replika, Mondly).
Machine Learning Algorithms	Personalised Learning Paths	Analyses learner data to create customised curricula tailored to individual strengths and weaknesses.
	Predictive Analytics	Identifies potential learning difficulties early and suggests timely interventions.

Table 1 presents examples of AI applications in language learning. While the range of applications is wide, this paper focuses on "chatbots, particularly ChatGPT," as a rapidly evolving tool for interactive and personalised language learning.

Chatbots and ChatGPT

One of the commonly utilized AI technologies for supporting teaching and learning activities is the Chatbot system (Okonkwo & Ade-Ibijola, 2020). Chatbots represent a rapidly evolving AI application that directly engages learners in simulated conversations, offering real-time feedback, contextual explanations, and interactive practice. A Chatbot is an intelligent agent that is capable of interacting with a user by answering a series of questions and providing an appropriate response (Clarizia et al., 2018). It emulates and interprets human communication, allowing individuals to engage with digital devices as though they were conversing with an actual human being (Ciechanowski, 2019). Chatbot uses Natural Language Processing (NLP). NLP is a technology that enables a machine to comprehend, analyze and interpret natural human languages.

The first chatbox, Eliza, was created as far back as 1966 followed by Parry in 1972 and Alice in 1995. As technology advanced, modern Chatbots are created, such as SmarterChild, Apple Siri, Amazon Alexa, IBM Watson, Microsoft Cortana, and Google Assistant (Reis et al., 2018).

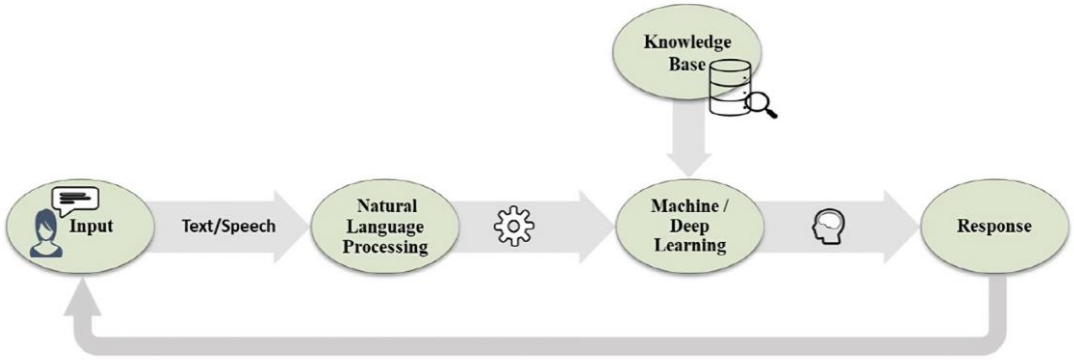

Figure 1. How a Chatbot functions (Aleedy et al., 2022, p. 662)

ChatGPT was launched in November 2022 by OpenAI (San Francisco, CA). ChatGPT is an advanced large language model, which enables open-ended, human-like dialogue. It supports vocabulary, grammar development and also higher-order communicative competence. ChatGPT describes itself as "a powerful machine learning software that uses the Generative Pre-trained Generative Pre-trained Transformers (GPTs) are a class of advanced language models that employ deep learning to enhance their output. These models are trained on extensive datasets. Through the identification of patterns and regularities in the data, GPTs generate appropriate phrases and words or produce relevant images in response to a user's queries (Rospigliosi, 2023). A wide range of tasks can be accomplished by ChatGPT, including language translation, text summarization, question answering, creative writing (such as poetry or fiction), generation of high-quality long or short form content (such as blog posts), responding to prompts in conversation, explaining complex subjects, concepts, or themes, and fixing errors in existing code or generating new codes (Eke, 2023).

ChatGPT's ability to understand natural language queries and generate human-like responses has made it a popular tool for getting quick answers to a wide variety of questions, from common to complex topics. ChatGPT has quickly established itself as a valuable resource for students and teachers. The latest version of ChatGPT (ChatGPT-5) was released in 2025 and is claimed to be more powerful and capable of performing more complex functions. Given its growing adoption in educational settings, examining ChatGPT provides valuable insights into how conversational AI can transform language learning experiences.

- *Benefits of ChatGPT*

ChatGPT is an advanced combination of deep learning, natural language generation, and dialogue management techniques, making it distinct from existing AI technologies (Abdullah et al., 2022). The key aspects of its benefits are outlined as follows.

1. Generates plausible responses to questions in human-like conversations and due to its robust NLP capabilities, ChatGPT can process and respond to user questions and follow up questions in an intuitive and user-friendly manner and generate human-like responses tailored to the context and content of the user's query (Abdullah et al., 2022). It can hold conversations with users in a way that is deceptively simple and easy to understand. This ability to mimic human-like conversation makes ChatGPT a more engaging and interactive tool for conversations, making users feel like they are talking to a real person rather than a robot.
2. Provides expert solutions and guidance for complex tasks. Most AI applications particularly, ChatGPT are designed by collecting expert knowledge from specific domains (e.g., medical diagnoses, fraud detection), which allows the machine to make decisions to solve complex problems like a human expert by extracting the knowledge stored in the knowledge base and making reasoning and inferences based on the rules and user queries. Drawing upon the expert knowledge stored in its knowledge base, ChatGPT can generate model solutions to complex tasks (e.g., completing computer program code, solving mathematical problems, creating sample essays). In addition to generating complete solutions, it can offer guidance or suggestions on breaking down a complex task into a series of steps, providing detailed step-by-step instructions to scaffold the task process.
3. Creates human-like writing or content. ChatGPT as an AI tool developed based on an advanced language model, it has garnered substantial recognition and widespread appreciation for its capability to generate content that resembles human-generated material such as essays, stories,

and poems based on user requests (Rudolph et al., 2023). With this function, ChatGPT can help teachers to prepare materials for teaching and learning.

4. Evaluates task performance and gives feedback. Designed with expert knowledge stored in the knowledge base, ChatGPT can generate model answers or solutions to complex problem-solving tasks. Leveraging such knowledge and model answers, ChatGPT can assess students' performance reflected in their task output, assignments, or essays, especially those in text-based forms (Cotton et al., 2023). Moreover, ChatGPT can create assessment rubrics and checklists and give informative feedback. In this way, ChatGPT can assist teachers in assessing student work as well as help students to make self -assessments, with a view to tracking learning progress and addressing knowledge gaps or misconceptions.

Harnessing the Potential of ChatGPT in Education

To harness the potential of ChatGPT in education, there is the need to first outline the framework of how people learn. This framework consists of four key elements: Content (C), Others (O), Self (S), and Tasks (T), collectively referred to as the COST model (Wang, 2018). The COST model delineates how people learn by interacting with the four key elements, where technology plays an increasingly important role in these interactions.

- Learning by interaction with learning content (C), such as learning materials.
- Learning by interaction with others (O), i.e., other people such as teachers, peers, parents, and so on.
- Learning by interaction with self (S), for example self-reflection, and self-regulation.
- Learning by interaction with problem-solving tasks (T), i.e., applying knowledge to practice to consolidate and update knowledge.

To ensure effective interaction with the four key elements, learners need to engage in higher-order thinking during the learning process (Wang & Wegerif, 2019).

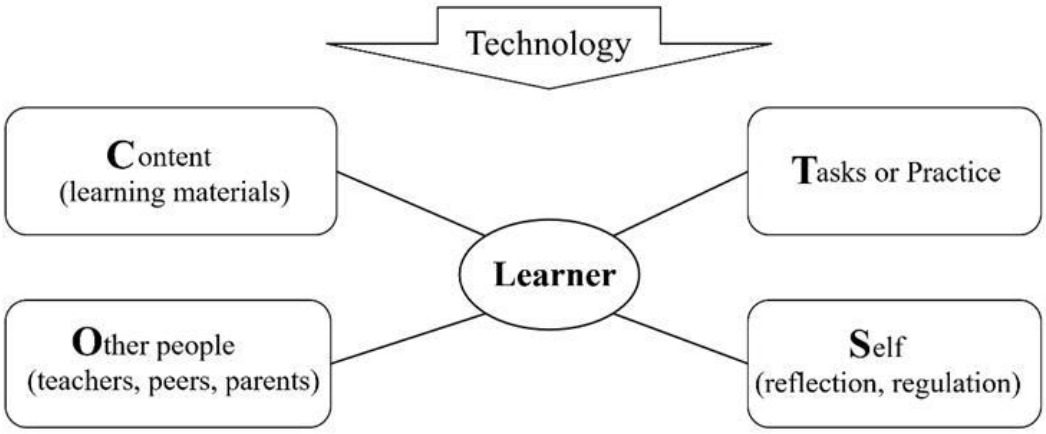

Figure 2: COST Model (Wang, 2018).

Figure 2 shows a **learner-centred framework,** where learning is supported by four key elements; Content, Tasks, Other people, and Self, all mediated by Technology.

1. Content (Learning Materials)

ChatGPT can generate customised learning resources in real-time, such as vocabulary lists, grammar explanations,

reading passages, or cultural notes. Unlike static textbooks, the content can be adapted instantly to the learner's level, interests, or target topics. For example, a beginner might request simple dialogues, while an advanced learner could explore debates or academic writing practice.

2. Tasks or Practice

Language acquisition thrives on practice. ChatGPT allows learners to engage in interactive tasks, such as role plays, question–answer sessions, or writing exercises. It can simulate real-world scenarios—ordering food, attending an interview, or travelling abroad—thus making practice authentic and contextualised. Additionally, it provides immediate corrective feedback, guiding learners to refine their responses.

3. Other People (Teachers, Peers, Parents)

While ChatGPT does not replace human interaction, it can complement teachers and peers by acting as a tireless conversational partner. Teachers may assign tasks where students interact with ChatGPT before class discussions, helping them prepare. Parents could also use it as a support tool at home to reinforce school learning. In this way, ChatGPT extends the social dimension of learning by providing scaffolding between formal instruction and independent study.

4. Self (Reflection, Regulation)

ChatGPT supports self-directed learning by encouraging reflection and metacognition. Learners can ask it to explain why an answer is incorrect, request alternative phrasing, or compare multiple styles of writing. This promotes self-regulation, as learners take ownership of their progress, monitor their understanding, and adjust their strategies.

Technology as the Mediator

At the centre of the framework, technology bridges the learner with content, tasks, social interaction, and self-reflection. In this case, ChatGPT exemplifies how technology transforms traditional language learning into an interactive, adaptive, and personalised experience. Its natural language processing capabilities enable real-time dialogue, ensuring that learners are not passive recipients but active participants in meaning-making.

Limitations of the use of ChatGPT in Language Learning

The use of ChatGPT in language learning has some limitations.

1. ChatGPT is still an emerging technology and its effectiveness has not been fully tested. While studies suggest that the ChatGPT could be a useful tool for language learning, more research is needed to determine its effectiveness in different contexts.
2. ChatGPT can be limited by data quality. If the data used to train the model is of low quality, the responses of the model may not be accurate or reliable. ChatGPT may have negative effects and implies the need to adjust educational goals, methods, and ethics education.
3. ChatGPT can be limited by the complexity of the tasks it is asked to perform. Although it can generate human-like responses to simple queries, it may struggle with more complex tasks.

Challenges

In spite of all its benefits, using AI in language learning also raises significant ethical and practical issues. These issues include the possibility that it might increase the already-existing inequalities in the educational system and inherent nature of AI algorithms that is prone to bias. Additionally, enabling teachers to successfully incorporate AI into their teaching practices needs relevant training and support.

Cost.

An important aspect to consider is the cost of implementing the ChatGPT in

education. This technology requires significant investment in terms of both hardware and software as well as ongoing maintenance and support. This may present a challenge for some educational institutions, particularly those in developing countries like Nigeria, and it is important to find ways to make the technology more accessible and affordable.

Ethical and safety issues.

The use of the ChatGPT in education also raises ethical and safety issues.

1. There is the potential for technology to be used to manipulate or deceive students. If the model is not properly monitored and regulated, it can be used to provide inaccurate information or lead students down the wrong path.
2. There is the potential for technology to be used to invade students' privacy. If the model is not properly secured, it can be used to collect sensitive information from students without their prior knowledge or consent.
3. There is the potential for technology to be used to discriminate against certain students. If the model is not trained on data that are representative of all students, it can be used to provide unequal access to education.

Challenging the Existing Assessment System.

Many educators, academic institutions, and schools are concerned about students using ChatGPT to complete their homework. Consequently, local educational authorities around the world often prohibit the use of ChatGPT in schools. However, Teng (2023) emphasizes the need for measures to mitigate the impact of ChatGPT on academic integrity and calls for a new reflection on approaches to address these ethical concerns.

Despite these bans, the trend of using ChatGPT in education continues to grow. Researchers are actively discussing the implications of ChatGPT for teacher feedback (Guo & Wang, 2024). Given ChatGPT's ability to understand language patterns (Rudolph et al., 2023), its potential to assist with writing-related tasks, such as correcting grammatical errors and rephrasing sentences, appears promising. The debate on whether ChatGPT should be banned or embraced by educators and students is ongoing, and empirical studies on AI in EFL writing are likely to continue.

Conclusion

Artificial Intelligence has become a driving force in reshaping language education, providing new opportunities for more personalised engagement, and effective learning experiences. While AI technologies such as Intelligent Tutoring Systems, Natural Language Processing, and Machine Learning contribute to adaptive instruction and learner support, this paper has highlighted ChatGPT as a transformative tool. By simulating authentic conversations and offering contextual feedback, ChatGPT extends language learning beyond traditional boundaries, enabling learners to practice, reflect, and regulate their progress within the COST model framework. Its benefits, include interactive practice, content creation, expert guidance, and formative feedback. This demonstrates its potential to enhance both learner autonomy and teacher support. However, challenges related to data quality, ethical concerns, cost, and the need for teacher training must be critically addressed to ensure equitable and responsible adoption. Ultimately, ChatGPT is not a replacement for human interaction but a complementary tool that, if harnessed thoughtfully, can significantly enrich the future of language education.

Recommendations

Based on the discussion in this paper, the following recommendations are proposed to maximise the effective use of ChatGPT in language education:

1. Teachers should integrate ChatGPT as a supplementary tool to enhance classroom teaching, particularly for

conversation practice and formative assessment. They should monitor students' use of ChatGPT to ensure they use it for self-directed learning while also guiding them on responsible and ethical use. Teachers should engage in continuous professional development to build confidence in their ability to incorporate AI tools into teaching practice.

2. Government (State and Federal) should ensure that educational institutions are provided with the necessary digital infrastructure and support systems to ensure equitable access to ChatGPT and similar AI tools. Government should organise training programmes to equip educators with strategies to effectively blend AI with pedagogy.
3. Policymakers should establish clear guidelines and ethical standards for the use of AI tools in education, addressing issues of privacy, bias, and data protection. Digital policies should be developed to promote academic integrity while leveraging AI for learning enhancement. The policies should ensure inclusivity by supporting initiatives that reduce the digital divide, especially in resource-constrained settings.

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Yoruba Language Teachers' Knowledge of and Attitude to Resource Improvisation in Yorùbá Orature in Public Senior Secondary Schools in Ibadan, Nigeria

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Abstract

This study investigated Yoruba Language Teachers' teachers' knowledge of and attitude to resource Improvisation in public senior secondary schools in Ìbàdàn, Nigeria. The survey research design was adopted. Participants were 100 teachers randomly selected from 50 schools (two per school). The instruments used were Teachers' Knowledge of Resource Improvisation Test (r=0.75) and Teachers' Attitude to Resource Improvisation Questionnaire (r=0.86), Data were analysed using descriptive statistics. Findings revealed that teachers' knowledge of resource improvisation, with a mean of 1.8 at the threshold of 1.5 was high. Teachers' attitude to resource improvisation ($\bar{x}$=2.95) was alsohigh, against the threshold of 2.50. It is recommended that teachers of Yorùbá orature should focus on these factors to enrich Yoruba orature instruction.

Keywords: Yoruba orature, Teachers, Resource improvisation, Knowledge, Attitude

Introduction

The aim of including Yorùbá language in the curriculum is partly to instill the Yorùbá moral and traditional values into the learners who belong to the younger generation. As a school subject at senior secondary schools, Yorùbá is taught and examined at public examinations. The least patronised section of Yorùbá by students is literature. This, according to Abijo (2013), is as a result of lack of interest in reading by students. In the examinations syllabus, Yorùbá Literature section is subdivided into Oral Literature and Written Literature. Instruction in Yorùbá literature is transparently skewed in favour of the written literature. This is perhaps due to the fact that while there are prescribed literary texts for teaching Yorùbá Written Literature, oral literature is largely a verbal art (Abijo, 2013).

Reader (2018) defines orature as artistic use of language in oral form. It is referred to in shortened form as orature. Oral Literature, therefore, relies extensively on verbal portraiture, while using other senses as support devices to amplify its message (Finegann, 2012). Okpewho (1992) defines oral literature as an artistic form rendered in spoken form. These definitions characterize orature as a primordial literary form that involves folktales, work songs, festival performances, tongue twisters, chants and incantations. The foregoing definitions are similar in that they refer to oral literature as literature or text delivered orally. This means that it becomes popular by being communicated.

Yorùbá oral literature exists in the three traditional genres of literature, namely, poetry, prose and drama. As the name implies, this type of literature is purely oral. It is the literature before written literature emerged. It is commonly found in daily lives, activities, festivals, ceremonies etc among the Yorùbá. Olukoju (1978) explains that such literature are often spoken, sung or chanted. It is also very close to music. No wonder then that Okpala (2006) wrote that oral literature is a very old

phenomenon which existed in almost every sphere of human society, and it is a mark of cultural identity.

Oral literature is one of the most vibrant aspects of cultural heritage. It is intricately related to the social environment of the people who create and perform it. As the creative expression of a people's culture, it manipulates language to express their values, beliefs, traditions and entire worldview. Oral literature is a powerful tool for facilitating this cultural dynamism. It is both a reservoir and a creative expression of cultural values; hence, it is the vehicle for propelling the society along its moral path. It is an art based on the cultural aesthetics of a people so that, besides giving a society a sense of direction, it responds to the human need to appreciate beauty, and in this way contributes towards making the world a better place to live in.

Effective teaching and learning of orature requires the deployment of appropriate resources to facilitate the understanding of orature concepts taught. Oral Literature is presented through words, mouth and actions. This is often reinforced by drums and other musical instruments and with the emerging technology, media like radio, video, audiotapes, televisions and films are expected to be used. Where these resources are not available, Yorùbá orature teachers are expected to improvise.

With the important position occupied by orature in the preservation of Yorùbá cultural heritage, it is expected that it will be well taught for students to record high achievement. However, the opposite is the case and this has led to reported cases of poor performances recorded in this aspect by students in Yorùbá Language at public examinations. The spate of poor performance in the aspect of Yorùbá orature at public examinations has been traced to poor attitude of students to Yorùbá orature because many view it as encouraging idol worshipping (Bateye, 2017; Adediran, 2019).

Prominent causes of poor learning outcomes in Yorùbá orature is the problem of non-use appropriate resources in the teaching of Yorùbá orature. Efforts to address the problem of poor achievement and attitude to Yorùbá orature focused extensively on teaching strategies and student factors. Despite the various insights provided by these studies to the teaching and learning of Yorùbá orature, teacher resource improvisation factors have not been sufficiently researched. These include Yorùbá orature teachers attitude to, knowledge, perception, skill and practice of resource improvisation. Thus, teacher resource improvisation factors need be investigated in the quest for improved teaching and learning of Yorùbá orature.

High quality instruction in orature requires deployment of appropriate resources. Although oral literature is presented through words, mouth and actions, this is often reinforced by drums and other musical instruments and with the emerging technology, media like radio, video, audiotapes, televisions and films are expected to be used.

It is the prerogative of the teachers of Yorùbá orature to make use of relevant accompanying resources in orature delivery and instruction (Fajola, 2008). Where these resources are not available. Teachers of Yorùbá orature are expected to improvise. Also, when the instructional materials are not provided or adequate, the ability to improvise in the classroom will substitute for the instructional materials. The teacher may also task the students to look for locally sourced materials for improvisation, such as carved woods to represent guns and use of plastic bowls to represent Ifá divination trays, gongs, egúngún costumes, orò masks, palm fronds and leaves to make Ògún dress, and cowrie shells, among others.

Also, when the instructional materials are not provided or adequate, the ability to improvise in the classroom will substitute for the instructional materials (Fajola, 2008). The production of the improvised resources is initiated by the teacher and done either by him or the local craftsmen

On knowledge of improvisation, Al-Sibai (2004) said that learners need a guide (teacher) who will impact positively on them in the teaching-learning process of orature. For orature to be effectively taught, there is the need for teachers to have adequate knowledge of resource improvisation.

Apart from knowledge of resource improvisation, teachers' attitude to improvisation is another factor that is being examined in this study. In the views of Sherin (2012), teachers' attitude towards improvisation is a function of their personal interest in it and commitment to it.

Statement of the Problem

Yorùbá orature, a verbal and performance-based art, is expected to be taught effectively in order to preserve the Yorùbá cultural heritage. With the important position occupied by orature in the preservation of Yorùbá cultural heritage, it is expected that it will be well taught for students to record high achievement. However, the opposite is the case at public senior secondary schools in Ibadan, and this has led to reported cases of poor performances recorded in this aspect of Yorùbá Language at public examinations. One of the prominent causes is the problem of non-use of appropriate resources to improve instructions in Yoruba orature. Attempts to address the problem of poor achievement and attitude to Yorùbá orature focused extensively on teaching strategies and student factors. Teacher resource improvisation factors have not been sufficiently researched. These include Yorùbá orature teachers' knowledge of and attitude to resource improvisation. Hence, this study investigated teachers' knowledge of and attitude to resource improvisation in Yoruba orature in Ibadan, Nigeria.

Objectives of the Study

The study set out to:

i. investigate Yorùbá Oral Literature teachers' knowledge of resource improvisation;
ii. explore Yorùbá Oral Literature teachers' attitude de to resource improvisation;

Research questions

What is Yorùbá Oral Literature teachers'

1. knowledge of resource improvisation?
2. attitude to resource improvisation?

Scope of the study

The study investigated Yoruba Language teachers' knowledge of and attitude to resource improvisation in public senior secondary schools in Ibadan, Nigeria.

Significance of the study

The research had given a firsthand piece of information on the resource improvisation knowledge and attitude of Yorùbá oral literature teachers at senior secondary schools in Ìbàdàn. Arising from the lapses and deficiencies detected in the resource improvisation knowledge and attitude of Yorùbá oral literature teachers, the study had also identified the area to focus when trying to organise workshops and seminars for Yorùbá Language teachers in Ibadan.

Methodology

The study adopted the survey research design. The participants were 100 teachers of Yoruba Orature from 50 randomly selected senior secondary schools in Ibadan (two teachers per school). The instruments used were Teachers' Knowledge of Resource Improvisation Test (r=0.75) and Teachers' Attitude to Resource Improvisation Questionnaire (r=0.86). Data collection lasted three schools The data collected were analysed using descriptive statistics

Results

Research Question 1: What is Yoruba Language teachers knowledge of Resource Improvisation?

Table 1: Yorùbá oral literature teachers' knowledge of resource improvisation

Sn	Statements	True	False	M	Sd	Remarks
1.	Improvisation is one of the teacher pedagogical skills	96 (96.0)	4 (4.0)	1.96	.197	**High**
2.	Improvised materials are substitutes for real objects	82 (82.0)	18 (18.0)	1.82	.386	**High**
3.	Innovativeness, resourcefulness and creativity are requirements for improvisation	92 (92.0)	8 (8.0)	1.92	.273	**High**
4.	Both human and material resources can be improvised	88 (88.0)	12 (12.0)	1.88	.327	**High**
5.	Improvisation makes learning faster	95 (95.0)	5 (5.0)	1.95	.219	**High**
6.	Improvisation fosters acquisition of skills	89 (89.0)	11 (11.0)	1.89	.314	**High**
7.	Improvisation aids discovery learning	94 (94.0)	6 (6.0)	1.94	.239	**High**
8.	Improvisation provides alternatives to teaching and learning aids	95 (95.0)	5 (5.0)	1.95	.219	**High**
9.	Improvisation act of designing a replica of standard equipment assigned to play some designated roles	89 (89.0)	11 (11.0)	1.89	.314	**High**
10.	The materials that could be used to produce improvised instructional materials are difficult to come by	62 (62.0)	38 (38.0)	1.62	.488	**High**
11.	Improvisation of teaching resources could make learners not to be abreast with the use of modern resources	67 (67.0)	33 (33.0)	1.67	.473	**High**
12.	The production of improvised materials increases the work load on teachers.	75 (75.0)	25 (25.0)	1.75	.435	**High**
13.	Pen lettering skill, modeling, free-hand writing are skills of resource improvisation	91 (91.0)	9 (9.0)	1.91	.288	**High**
14.	Shortage of resources and lack of teachers' experience are challenges of improvisation of resources	73 (73.0)	27 (27.0)	1.73	.446	**High**
15.	Improvisation of resources could only be done by experienced teachers	61 (61.0)	39 (39.0)	1.61	.490	**High**
Weighted Mean: 1.83		**Threshold: 1.5**				

Table 1 shows the responses of Yorùbá oral literature teachers' knowledge of resource improvisation. It reveals a weighted average of 1.83 at the threshold = 1.5, indicating that Yoruba Language teachers' had a high knowledge of resource improvisation.

Research Question 2: What is Yorùbá Oral Literature teachers' attitude to resource improvisation?

Table 2: Yorùbá oral literature teachers' attitude to resource improvisation

Sn	Statements	SA	A	D	SD	M	Sd	Remarks
1.	I dislike resource improvisation	19 (1 9.0)	5 (5.0)	29 (29.0)	47 (47.0)	1.96	1.136	**Disagreed**
2.	I like teaching orature with improvised materials	17 (17.0)	54 (54.0)	25 (25.0)	4 (4.0)	2.84	.748	**Agreed**
3.	I read books on resource improvisation	33 (33.0)	60 (60.0)	6 (6.0)	1 (1.0)	3.25	.609	**Agreed**
4.	I am not bothered about improvising resources for the teaching of orature	20 (20.0)	43 (43.0)	26 (26.0)	11 (11.0)	2.72	.911	**Agreed**
5.	I watch video recordings of resourceful teaching	26 (26.0)	62 (62.0)	8 (8.0)	4 (4.0)	3.10	.704	**Agreed**
6.	I don't care if I teach orature without teaching resources	19 (19.0)	33 (33.0)	33 (33.0)	15 (15.0)	2.56	.967	**Agreed**
7.	I regularly attend conferences on resource improvisaion	25 (25.0)	50 (50.0)	17 (17.0)	8 (8.0)	2.92	.861	**Agreed**
8.	Teaching Yoruba orature resourcefully is fulfilling	26 (26.0)	59 (59.0)	8 (8.0)	7 (7.0)	3.04	.790	**Agreed**
9.	I find teaching of orature with improvised materials interesting	39 (39.0)	46 (46.0)	11 (11,0)	4 (4.0)	3.20	.791	**Agreed**
10.	Creative teaching of orature is difficult to implement without improvised materials	17 (17.0)	51 (51.0)	24 (24.0)	8 (8.0)	2.77	.827	**Agreed**
11.	I do not see any reason to read about resource improvisation	27 (27.0)	27 (27.0)	35 (35.0)	11 (11.0)	2.70	.990	**Agreed**
12.	I support creative teaching workshops for teachers of Yorùbá language	42 (42.0)	44 (44.0)	9 (9.0)	5 (5.0)	3.23	.815	**Agreed**
13.	If possible, improvisation of instructional materials should be made part of the criteria for promotion	34 (34.0)	47 (47.0)	14 (14.0)	5 (5.0)	3.10	.823	**Agreed**
14.	I contribute to discussions on resource improvisation	34 (34.0)	47 (47.0)	14 (14.0)	5 (5.0)	3.15	.657	**Agreed**
15.	I attend seminars on resource improvisation	34 (34.0)	51	11	4 (4.0)	3.15	.770	**Agreed**
16.	Resourceful teaching of Orature is unnecessary	23 (23.0)	33 (33.0)	33 (33.0)	11 (11.0)	2.68	.952	**Agreed**
17.	Development of improvisation skill should be part of teacher preparation programmes	34 (34.0)	50 (50.0)	13 (13.0)	3 (3.0)	3.15	.757	**Agreed**
18.	Improvised resources make orature lessons practical	20 (20.0)	70 (70.0)	10 (10.0)	- (0)	3.10	.541	**Agreed**
19.	I subscribe to journals on resource improvisation	30 (30.0)	51 (51.0)	16 (16.0)	3 (3.0)	3.08	.761	**Agreed**
20	I feel excited when I teach orature with improvised materials	30 (30.0)	50 (50.0)	12 (12.0)	3 (3.0)	3.20	.725	**Agreed**
Weighted Average: 2.95				**Threshold: 2.50**				

Table 4.4 shows the responses of Yorùbá oral literature on teachers' attitude to resource improvisation. It reveals a weighted average of 2.95 at a threshold of 2.50, indicating that the attitude of YO teachers to improvisation was positive.

Discussion

Yorùbá language teachers' knowledge of improvisation

Findings further revealed that the sampled Yorùbá language teachers at senior secondary schools in Ibadan had a high knowledge of resource improvisation. This perhaps is traceable to the fact that they were adequately exposed to improvisation in their educational technology courses during their training as teachers in their various universities. Another explanation for this finding is frequent participation in professional development activities such as capacity building and MDG training workshops in which they were exposed to knowledge of improvisation of materials for effective teaching and learning. This finding upholds that of Edun (2020) who found that Social Studies teachers exhibited a high knowledge of improvisation. The finding is however, at variance with Mausethagen (2015) who reported that teachers of orature lack adequate knowledge of resource improvisation The contradictions in the finding of this study and that of Mausethagen (2015) reported above might be owing to differences in the participants and location of the earlier studies. Knowledge is dynamic and it grows daily. Avenues for improving knowledge of improvisation are increasing daily with emerging technologies.

Yorùbá language teachers' attitude to improvisation

The result indicated that Yorùbá language teachers at senior secondary schools in Ibadan have a positive attitude to resource improvisation. A probable explanation for this finding is the high knowledge possessed by the teachers of the Yorùbá orature. It is logical that a high knowledge of the resource improvisation will engender positive attitudes towards it. The finding is at variance with that of Aina (2018) who found that the attitude of preservice teachers to resource improvisation for teaching English suprasegmental features was poor as a result of which they could not serve as models to their students. The difference in the finding of this study and that of Aina (2018) is in the participants and location of the studies. While this study took place among teachers of Yorùbá orature at senior secondary schools in Ibadan, that of Aina was conducted in Ogun State among the preservice English language teachers in colleges of education.

Conclusion

The study investigated Yoruba Language teachers' knowledge of and attitude to resource improvisation in senior secondary schools in Ibadan. Findings revealed that teachers' knowledge of resource improvisation and attitude to resource improvisation were high. The conclusion that is drawn is that teachers' knowledge, and attitude are the key factors that could predispose them to improvise resources in Yorùbá orature.

Recommendations

1. Teachers of Yorùbá orature should develop positive attitude towards resource improvisation to enrich classroom activities.
2. Regular capacity building programmes should be held for teachers of Yorùbá orature to increase their knowledge of resource improvisation.

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The Influence of Artificial Intelligence (AI) on Writing as a Component of the English Language: A Bibliographical Analysis.

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Abstract

The current bibliographical analysis examines the increasing role of Artificial Intelligence (AI) in writing as a component of English language studies. Due to the ongoing development and penetration of AI into learning processes and linguistic tasks, the role of this technology in writing pedagogy, authorial identity, and its effects and implications of creativity and feedback are connected with the aspects of pedagogical and ethical concerns. After critically and thoroughly analyzing how the AI-based tools GRAMMARLY, CHATGPT, QUILLBOT, AND TURNITIN (not an exhaustive list) have revolutionized writing, teaching, and learning, the paper utilizes recent and peer-reviewed scholarly resources. Issues with originality as well as dependence on AI and learning equity are also explored in the paper. This paper posits that AI should find a healthy balance in writing by combining logic and creativity without eradicating human ingenuity and critical thinking, which can be achieved through a critical review of the literature synthesized together using a theme. The study ends by recommending the best practices to educators and researchers and some future research directions in AI-mediated writing.

Keywords: Artificial Intelligence, Writing, English Language, Pedagogy, NLP, Plagiarism, Academic Integrity, Large Language Models (LLM).

Introduction

The digital revolution has seen the emergence of tools and platforms that are transforming the way people communicate, learn, and create the written word. The main technological change here is the maturation of artificial intelligence (AI); this is already being widely used in the teaching and learning of the English language, especially concerning teaching and practice in writing. Machine learning and natural language processing (NLP) are AI-based technologies that are gaining popularity in institutions of learning as platforms to assist students in writing coherent, correct, and situational appropriate written English.

The writing process, being a crucial element of English language teaching, is not about utilizing grammar regulations mechanically, but it involves the use of creativity, organization, and rhetorical sense. The conversation has been dominated by the new paradigm in writing education provided by AI-fuelled applications, like OPENAI on its chatbot CHATGPT, as well as GRAMMARLY and TURNITIN, that challenge traditional teaching and student learning behavior (Dwivedi et al., 2023; Luckin et al., 2016).

Nevertheless, although the positive effects of AI and utilizing it in the form of improving the quality of writing and direct feedback are widely discussed, the use of such tools poses some ethical, cognitive, and pedagogical issues. Among the concerns raised are reduced critical thinking, cheating, degradation of students' writing agency, and the inequality of access to digital resources (Zou et al., 2022; Floridi & Chiriatti, 2020).

This paper attempts to present a descriptive bibliographical examination of the findings of the existing academic discourse on the impact of AI on writing as a constituent of the English language studies. Via thematic review of the modern literature, the current

study aims to not only elucidate the opportunities, as well as the challenges of AI in writing, but also outline the existing knowledge gaps and make recommendations about the future pedagogical approaches.

2.1 An Overview of Artificial Intelligence and Natural Language Processing (NLP)

Artificial intelligence (AI) is considered a broader field of study meant to perform types of work that usually require human intelligence, such as decision-making, problem-solving, perception, and natural language understanding (Russell & Norvig, 2021). Natural language processing (NLP) is also an important aspect of AI, which involves the learning of how computers comprehend and manipulate human language. Its related work encompasses tasks such as language translation, sentiment analysis, and, more recently, AI tools used by writing interpreters to help writing (Jurafsky & Martin, 2023).

There has been global attention to Artificial Intelligence and Large Language Models in the years, due to their potential applications which seem to be very large and strong. For instance, in the field of language translation, one can leverage these models to achieve better accuracy and efficiency of machine language translation, making it easier for people to communicate in different languages. LLMs can be used to automatically write fresh articles, product descriptions, and other kinds of text material (Ross et al., 2024).

Many writing AI systems based on NLP technologies rely on the language rules and large language models that are trained to create and analyze text. The GPT series of tools developed by OPENAI and the BERT MODEL created by GOOGLE can be considered right examples since they enable the creation of contextually compelling texts (Brown et al., 2020; Devlin et al., 2019). Aside from having the capability to identify grammatical constructions, such tools also show tendencies to acquire greater capacity to resemble stylistic flair, facilitating advanced writing support.

2.2 Historical and Conceptual Development of AI in Language Learning

Historically, AI usage for language learning initially emerged in the form of early computer-aided language learning (CALL) systems that appeared in the 60s and 70s, providing rudimentary drill-and-practice programme (Warschauer & Healey, 1998). By the early 2000s, such a system had developed into intelligent tutoring systems and adaptive learning systems following further advances in NLP and computational linguistics (Chun, 2016).

The recent advances in machine learning, with deep learning taking center stage, have been portrayed as significantly enhanced AI capabilities compared to the language learning department. The AI systems can provide real-time feedback on style, simplicity, grammar, and even creativity as far as writing is concerned. Such tools as GRAMMARLY, QUILLBOT, and CHATGPT represent this change when they no longer use a set of rules but instead use a probabilistic, data-driven model that imitates human behavior to produce (Luxton, 2023).

For example, ChatGPT, an AI-enabled tool, can properly assist users with the intended information according to their queries (Fitria, 2023; Yan, 2023). The introduction of AI has revolutionized developments in various fields, and the field of education and language acquisition is not excluded (Spiro et al., 2017; Balyen and Peto, 2019; Su et al., 2023), cited in Wei (2023).

3.0 Literature Review

There is a rise in the use of artificial intelligence (AI) tools in education, and the teaching and learning of writing in particular. This literature review summarizes specific research on the use of AI in writing instruction, including the usage of AI tools, the pedagogical advantages and issues of concern, the effect of AI on student writing and

thinking, as well as the consequences of the effect of AI on academic integrity.

3.1 AI Used in Writing

Writing practices have been drastically changed by the creation and adoption of AI-based tools like GRAMMARLY, CHATGPT, AND QUILLBOT. Grammarly is a machine learning algorithm-based grammar and style checker that can correct syntax, punctuation, and stylistic inconsistencies and act as a real-time feedback tool (Sydorenko et al., 2021). Likewise, QUILLBOT is an AI-based application to paraphrase or summarize any text and encourages the use of different words to make the writing more readable (ZHOU et al., 2023). CHATGPT is a chatbot programmed to produce a human-like output through prompt-based deep learning by a generative pre-trained transformer (GPT) model, thus helping to create ideas, reorganize ideas and sentences, and improve their content (OPENAI, 2023).

The tools will provide immediate and easy-to-access language assistance that may enhance the self-editing skills of students, as well as open up their lexicon. Their further common use in the educational and work environment implies a trend toward the independent, AI-assisted learning of writing (Dwivedi & Abdulkarim, 2022). ChatGPT and Grammarly demonstrated strong support in various aspects of scientific writing. ChatGPT effectively generated drafts, synthesized findings, and suggested innovative topics, particularly for introductory and summary sections (Granjeiro et al,2025).

3.**2 Educational Advantages and Issues**

There are instructional advantages of AI tools that are interesting. First, they allow for differentiation, therefore, providing students with personal critical feedback and allowing them to improve their work (Mphahlele & Mokwena, 2022). For example, GRAMMARLY and other programmes that help ESL students detect most of the common language mistakes and provide constructive feedback improve the language learning process (Lee & Han, 2022).

Yet, pedagogical issues are associated with such advantages. The opponents of the idea posit that excessive use of AI tools can suppress the metacognition capacity, the capacity for critical thinking and self-evaluation (Li, 2023). Worse, the pedagogical transparency of the way that these tools produce answers does not allow students to learn about the writing process, making the latter a simplistic algorithmic task (Farrell & Goudarzi, 2021). On top of this, inequality of access to and utilization of AI tools, especially for disadvantaged students, can be further increased due to the inequality of accessibility and digital competence (Zawacki-Richter et al., 2019). The most common controversy within the scientific and academic community today is about ethical concerns of academic integrity, such as plagiarism. AI use in academic writing undermines the originality of academic research, as it could lead to plagiarism or hinder the process of developing original thought and critical thinking [Livberber et al, in Weidmann 2024].

3.3 The Impact of AI on Students' Thinking and Writing.

Artificial intelligence, a branch of computer science, enables machines to simulate human intelligence, acquire intelligence through experience, and perform tasks that would be typically unique to the cognitive capabilities of humans. In education, AI technologies have vast possibilities to transform traditional ways of learning, offering individualized learning experiences as per individual needs and preferences (Hwang et al., 2020).

While AI technologies make writing more efficient on the surface in terms of coherence and grammar, their influence on deeper intellectual aspects is doubtful. On the other hand, AI can enable a more iterative writing process because it can feel comfortable enough to try words out and get instant

comments (Qian et al., 2023). On the other hand, the process based on AI to produce the sentence structure or concept may stifle personal thought and creativity (Stede & Kretschmer, 2022).

In alignment with Ouyang and Jiao (2022), who undertook a study, students indicated that AI assisted them in producing better texts, but at the cost of their capacity for producing new ones. The two-sidedness implies that there exists the possibility of AI as a tool with minimal reflective pedagogy to enable or even hinder the development of critical writing skills.

Giglio and Pereira da Costa (2023) enumerated the following negative impacts of AI on writing: strengths.

1. Unable to understand added information and come up with new ideas and in-depth analysis, which would limit the discussion in a scientific paper.
2. AI tools are well-positioned to replicate mainstream thinking rather than noticing or developing new results.
3. Dependence upon the output and superficiality will decrease scientific innovation by decreasing the impact of papers in creating true contributions to a given field of knowledge. AI could perform worse at deciding if a new outcome is innovative or spurious. Therefore, reliance on AI for this will reduce the number of future breakthroughs in scientific progress.
4. AI programs can damage writing skill development by instructing young researchers and ease plagiarism.

3.4 Academic Integrity and Plagiarism Concerns

Artificial intelligence technology increases the levels of concern regarding academic integrity. Algorithms like CHATGPT are capable of generating meaningful essays and therefore presenting them without proper recognition, a gray area on one side, assistance on another side, and dishonesty on yet another side (Cotton et al., 2023). Secondly, using paraphrasing software like QUILLBOT can be vulnerable to the temptation of cheating a plagiarism scanner, and it raises some ethical concerns regarding how to write (Yeo, 2023).

Teachers have reported that it is difficult for them to identify content generated by AI, hence the need to establish new forms of literacy and modes of evaluation that account for the use of AI in the writing process (Van Dis et al., 2023). In addition, an increasing appeal is made to change policies and provide educational training on how to use AI in an ethically positive way by lecturers and students (Khalil et al., 2023).

3.5 LITERATURE GAPS

Even where there is an increasing literature on AI and writing, there are still outstanding gaps. To begin with, the majority of studies target cases in higher learning in technologically well-developed countries, creating a research gap in the scenario of topics in under-researched settings. Second, little longitudinal research is available on the development of writing due to the prolonged usage of AI. Moreover, not many researchers focus on the emotional and motivational effects of utilizing AI, like writing anxiety or independent autonomy of learners.

One more poorly examined topic is the role of AI in collaborative writing, assignments, and peer reviews, where the AI presence affects the process of group dynamics, and the co-construction of knowledge is not clear. Filling these gaps might offer a more comprehensive insight into the pedagogical role of AI and shape a more effective and not just a teaching strategy for writing.

4.0 METHODOLOGY

This study uses a bibliographical research approach commonly referred to as a systematic literature review to examine how

the use of artificial intelligence (AI) tools contributes to teaching students to write better in English as a second language (ESL) classes. The approach is suitable for the synthesis of available scholarly literature, discovery of theoretical trends, location of research gaps, and assessment of pedagogical implications (Snyder, 2019).

4.1 **Bibliographical Research Approach**

It is possible to consider a bibliographical or systematic literature review as an activity where the existing research close to a certain topic is gathered and analyzed, and interpreted (Boell & Cecez-Kecmanovic, 2015). The given approach will allow the researcher to thoroughly study how AI-based tools like GRAMMARLY, CHATGPT, AND QUILLBOT have been applied to the academic setting, especially to ESL writing education. It also enables us to see how these technologies are in concordance or contradiction with old theories on language learning, like constructivism and sociocultural theory.

4.2 **Criteria for Selecting Sources**

The inclusion of sources in the present study was limited to materials that satisfied the following requirements:

1. It is published in the period between 2013 and 2025 to be topical to new achievements in AI and NLP.
2. The articles were peer-reviewed journal articles, scholarly conference proceedings, and trustworthy reports provided by educational technology organizations.
3. In English and dedicated to applying AI to the teaching of writing, specifically to ESL/EFL learning settings.
4. Theoretical or empirical surveys that respond to diagnostic implications, academic integrity, and student interventions with AI tools.
5. Articles that did not provide methodological clarity or were not pertinent to the application of ESL writing at all were discarded.

4.3 Search Strategy and Databases

Various academic databases were consulted to search relevant literature, viz.:

1. Scopus- for peer-reviewed journal articles on technology integration in education.
2. Jstor for historical and theoretical studies of education psychology, and writing style guidelines.
3. Google Scholar - to find new developments and grey literature.
4. Eric (Education Resources Information Center) - in pedagogy and research-based practice.

Some of the search words and phrases used were artificial intelligence and ESL writing, CHATGPT in the classroom, Grammarly and writing ability, AI and academic integrity, and AI tools in language learning.

4.4 **Number and Types of Sources Analyzed**

Forty academic sources were picked to analyze. They consisted of:

- 28 peer-reviewed journal articles
- 6 conference papers
- 4 book chapters

The literature covered literature in Asia, Europe, Africa, and North America to provide the global scenario and implications of AI on ESL writing teaching.

4.5 **The Weaknesses of the Method**

Limitations of the bibliographical research method exist, although they are not particularly mentioned. Firstly, it is based only on secondary statistics and therefore cannot reflect new classroom realities and complex experiences of teachers and ESL students interacting with AI technology. Secondly, there is publication bias in favor of positive results, and this could ignore the research studies that report the negative consequences or the challenges of implementing AI. Last but not least, the fast-evolving nature of AI technologies, and particularly the trend in the development of large language models, implies that certain information may become obsolete

rapidly, which is the reason for the necessity to constantly update the library of literature.

5.0 Findings and Thematic Discussion

In this part, the results of the literature review are synthesized concerning the main themes identified in the course of bibliographical research. These are writing quality and fluency, AI-assisted feedback and editing, changes in writing pedagogy, and concerns of creativity, authorship, and accessibility.

1. Quality and fluency of writing

One of the common issues, which was raised in the literature, is the ability of AI-driven tools to enhance the writing fluidity of students and their linguistic precision. Grammarly, Quillbot, and other similar applications provide individuals with an opportunity to indicate grammatical inaccuracies, enhance the structures of the sentence, and offer various lexical options. Research indicates that students who employ the tools are almost always able to exhibit enhanced coherence, distribution of vocabulary, and syntactic variations when writing (Zhang & Zou, 2022; Ranalli et al., 2022).

These tools give real-time, automated feedback that is readily available as well as scalable, which is especially useful in large classrooms or low-resource states. The features that include suggestions, prompts, and rephrasing options help support the iterative learning process, lowering the degree of writing anxiety among students and cognitive overload (Lee, 2022). Nonetheless, its opponents advised against excessive use of these tools as they may reduce the interest of learners in the complex process of writing, especially argumentative and reflective writing that involves critical thinking (Hockly, 2023).

2. AI-driven feedback and editing

AI tools can offer formative and summative feedback, in which students can get assistance at various levels during the process of writing. Bui and Kong (2022) note that students perceive AI-provided feedback as useful, agreeing, and less critical than human feedback. This provides a trouble-free setting, particularly for language-related self-efficacy problem-prone students.

And it has also been found that the use of AI in feedback helps to bridge the gap, and not replace, the work of teachers. Teachers will be able to dedicate themselves to the higher-order problems, such as organization, thinking, and content creation, whereas AI will deal with the lower-order problems, i.e., grammar and punctuation (Xu et al., 2023). The collaboration enhances the revision process and assists in aligning learning pathways with the needs of various groups of students.

But the argument that AI feedback is simplistic in the sense of leaving a lot of contextual and rhetorical context is also argued by theorists (Godwin-Jones, 2023). The example can be given to computer algorithms, and that is something which tells us that computers are capable of offering mechanical suggestions with nothing to take into account, voice, audience, or genre expectations, churning out over-homogenized writing results.

3. Changes in pedagogy writing

Using AI in learning writing has brought deep pedagogical shifts. The process approach has had a challenge, as AI can support the identification of recursive drafting, self-editing, and free learning. Other instructors have revised their course frameworks to include modules of AI literacy whose areas of coverage are literacy in using writing AI tools and their critical perspectives (Elola & Oskoz, 2023).

Additionally, it has been proven that mixed learning with the introduction of AI supports increased student engagement. Through such environments, students are not only accustomed to experiencing writing as a linear endeavor but also receive one from human and machine sources of feedback that

provide them with feedback (Sun et al., 2022). At the same time, with such encouraging trends, teachers are worried about being deprived of conventional writing practices if students avoid brainstorming and planning stages and use AI-driven instant creation (Luckin & Holmes, 2022).

4. What are one to do with creativity, authorship, and originality?

With the increasing use of generative AI tools, most notably large language models like CHATGPT, the question of creativity, authorship, and academic integrity once more arises. Although the interesting use of AI to generate and write by offering ideas on topics or rephrasing sentences, it also carries the danger of implicit plagiarism and ghostwriting (Kasneci et al., 2023).

The students might not know how to divide the work between themselves and the AI tool when doing so, especially if clients are presented with lengthy blocks of text. This ambiguity complicates the forms of assessment and dilutes the pedagogical utility of writing as a means of building individual voice and critical thinking (Mahlow, 2023). Colleges are already updating their honor codes and creating AI-detecting to maintain academic integrity and, despite being perfect, may generate false positives (Tavernier, 2023).

5. Equity and accessibility in the use of AI

The advantages of AI in writing are not fairly distributed. Premium tools, quality internet access, and skills in digital literacy generate a digital break in under-resourced educational situations (Bond et al., 2022). The students of marginalized backgrounds might have low capacities to utilize these technologies and thereby intensify existing disparities.

However, other scholars stress how AI can be used to enhance inclusivity once an intelligent implementation is adopted. As an example, natural language processing could help students with learning disabilities or students learning English as a second language de-complexify texts and provide speech-to-text (Holmes et al., 2022). The formulation of such tools, nonetheless, does tend to be influenced by the language and cultural conventions of the strongest populations, only to a certain extent, by world education systems.

6.0 Implication And Future Outlook

Inclusion of artificial intelligence (AI) tools in the academic writing processes in educational settings taught and spoken in English has wide-ranging consequences on teachers, students, and curriculum developers. With the further evolution of AI, it is redefining conventional practices in teaching, affecting the academic experience, and creating ethical and policy-related issues to which it is necessary to respond positively by demonstrating responsible and fair usage.

6.1 **The Implications Of The Findings Of The Current Research On English Language Teachers, Students, And Curriculum Designers**

AI-based tools such as CHATGPT, GRAMMARLY, AND QUILLBOT can be a potent scaffolding machine for ELL teachers, as they will be able to deliver target-specific instructions and feedback to the learners and differentiate among groups (Bikowski & Velliquette, 2021). They help to fix grammar mistakes, increase vocabulary, and structurally enable teachers to concentrate more on the higher-order skills like argumentation and coherence. Nevertheless, teachers need to respond similarly because they have to gain digital literacy skills to help students use AI tools in a morally and practically correct way (Yin & Satar, 2022).

In the case of students, adaptive and real-time feedback could be provided through AI-powered platforms, and it improves fluency and confidence with their writing (KOHNKE, 2023). However, it is dangerous to become over dependent, and this may dampen logical thinking and problem-solving. It should not be

limited to teaching learners on writing mechanics merely, but also on how to evaluate and clean up AI-written content to maintain ownership and authenticity of their work (Bahrami, 2023).

Today, curriculum designers have to react to this growing level of omnipresence when it comes to AI by incorporating essential digital literacy, data ethics, and AI literacy into writing curricula. It includes the redesigning of syllabuses to offer lessons on collaboration with AI, the development of metacognitive considerations of students to understand how they apply AI, and what goals they set (Luckin, 2018). It is also the process of balancing between historical pedagogical ideals and the new technologically available opportunities.

6.2 **Policy And Ethical Consideration**

AI application in writing pedagogy also has some ethical considerations. The academic institutions need to come up with clear guidelines on what is acceptable and what is not acceptable when using AI to uphold academic integrity. Some examples include the AI tools used being cited and the prompts being recorded. That way, there will be transparency and good ethical research practice.

Furthermore, the distinction between supported writing and plagiarism should be emphasized so that students will not be compelled to do the incorrect things (Cotton et al., 2023). Academic integrity in using AI for tests as well as for assignments must be fostered, and teachers themselves must lead by example where they use AI in ethical ways.

The second issue stemming from the use of AI in academic composition is that of privacy. Monitoring of AI instruments typically involves the gathering of information associated with the user upon which algorithms are trained and thus becomes problematic concerning personal information, consent, and security (Zawacki-Richter et al., 2019). The institutions must make sure that AI technologies used in the classroom fit into data protection laws like the General Data Protection Regulation (GDPR), especially where children are involved.

Second, equity should be one of the AI policy principles. Unequal access to the internet and broadband internet increases achievement gaps since not all students receive the support equally (Holmes et al., 2022). The policymakers in education should ensure that the use of AI tools is inclusive and reaches all learners so that the digital divide does not hinder them learners.

6.3 **Research and practice directions in the future**

The future study ought to include the investigation of the consequences of the use of AI on student writing development, critical thinking, and the development of writing identity. Empirical research that evaluates the transformation of classroom dynamics, teacher personas, and student-teacher dynamics caused by AI is also required. In addition, the cross-cultural research may elude insights into the perception and use of AI writing tools across language and education groups.

The other potential research direction is in the area of culturally sensitive and pedagogically benevolent AI tools. The majority of platforms currently trained with generic corpora do not necessarily account for the English language learners' linguistic needs. Cooperation in the field of collaboration between educators, linguists, and developers is capable of developing more effective AI systems concerning diverse learners AI systems.

Conclusion

This article has attempted to question the roles of artificial intelligence (AI) and natural language processing (NLP) tools in writing English for tertiary learners. The literature review undertaken has been able to consolidate existing literature concerning the uses of AI tools, such as ChatGPT, Grammarly, and Quillbot; however, some pedagogical benefits and issues were

highlighted. The review also delved into the effect of these tools on students' writing quality, cognitive involvement, and academic integrity.

Besides the specific effects that may be more significant, the literature indicates the dual nature of AI in teaching writing, on one side, and reah-time transformational opportunities that it opens, on the other side (e.g. it has practical implications for teachers, curriculum designers, and policy makers who are faced with navigating the implementation of AI in learning responsibly.

Ultimately, the future of English language writing instruction would have to find the correct balance of the potential to improve writing with the aid of AI and all the characteristically human activities it brings with it: creativity, contextual thinking, and cultural expression. Thus, with the continued advancement of technology, research and discussion are warranted to ensure that the role of AI will continue to be that it supports human writing, learning, and research processes when used ethically and responsibly rather than replacing them.

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Challenges of Using Artificial Intelligence in the Teaching of Yoruba Language in Senior Secondary Schools in Ibadan Metropolis, Nigeria: Teachers' Perspectives

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Abstract

This study investigated the perception of Yoruba Language teachers on the use of Artificial Intelligence in the teaching of Yoruba Language in selected senior secondary schools in Ibadan, Nigeria. The study adopted the survey research design. Three local government areas (LGA) were randomly selected from the existing 11 LGAs in Ibadan. Ten senior secondary schools (three per LGA) were randomly selected, while all the teachers of Yoruba Language in the sampled schools were enumerated. The instruments used was Teachers' Perception on the Use of Artificial Intelligence Questionnaire (r=0.78). Data were analysed using descriptive statistics of means, standard deviation, percentage and frequency counts. The findings showed that Yoruba Language teachers perceived the challenges of using AI to teach Yoruba Language as stifling critical thinking of students, teachers' difficulty in adapting to the use of AI in class, encouraging plagiarism, being cost intensive, leading to addiction to technology and students not having access to android phones to access AI. It was recommended among others that School management body should establish an AI Support Centre in their schools that will provide awareness and support its application in the teaching of Yoruba Language.

Keywords: Challenges, Artificial intelligence, Yoruba Language, Perception, Teachers

Introduction

The importance of Yoruba language among the Yoruba people is immense. It is a means to sharing a common identity and maintaining unity among its users. The Yoruba language, like any other language, brings to life the deeds of kings and emperors for younger generations. It affords people to know about the causes of past socio-political and economic instability and insecurity, and how stability, national security and conflict prevention were tackled. Within the language, the Yoruba express their feelings, aspirations, desires, and interact with one another as far as human society is concerned.

The Yoruba language is a mirror that reflects the worldview of its people. It anchors the core values of Yoruba and propagates their culture. Oyebanji (2012) emphasized that Yoruba language and culture are inseparable. It is a means through which disintegration is prevented among the social group. This is important because development of one influences the other while degeneration of one affects the other.

The language is taught and used as a medium of instruction at the elementary level of education up to primary three where it is the language of immediate environment (NPE, 2013). In career choice, the Yoruba language is one of the important Arts subjects that are required for admission into certain courses at the tertiary level of education. For instance in the Faculty of Law, to study Civil and Commercial Law, Students need credit passes in any three Arts or Social Science subjects; in the Faculty of Arts and Humanities, to study Language Arts and Yoruba, Yoruba (Philosophy, Yoruba and Communication Arts; Yoruba/Religious Studies; Yoruba/ Music/

Drama Theatre Arts; in the Faculty of Education, Yoruba language is one of the teaching subjects. Though Yoruba Language is not a compulsory subject for admission in tertiary institutions of learning like English Language, it is a required subject to qualify students to study some courses. The utility of Yoruba Language, notwithstanding, reports show that students do not attain high grades in the subject at public examinations. this has been partly traced to their poor knowledge of Yoruba language vocabulary.

For example, the West African Examinations Council (WAEC)'s *Chief Examiner's report* in 2014, 2015 and 2016 revealed that many students misinterpreted the terms, idioms and words which showed they lack in-depth knowledge of Yoruba vocabulary. Thus, it can be extrapolated from this report that students need adequate knowledge of Yoruba words, terms and proverbs and meaning to do well in the examination. The poor grades of students in Yoruba Language have implications on students' career choice, moral development and total way of life.

Despite the numerous challenges facing teaching and learning of Yoruba language, continuous efforts are on to maintain the status of Yoruba language as a substantial major Nigerian indigenous language. It is important to make it known that despite the ascendancy of English over Nigerian indigenous languages; the Yoruba language has had an interesting history of growth and literary development of instruction at all educational levels. In 1966, Yorubá was approved as an honour's degree course at the University of Ibadan. In June 1974, the West African Examinations Council added Yorubá to its list of Advanced Level subjects. Today, nearly all the government universities (Federal and State) in southwestern Nigeria offer Yorübá as undergraduate nd postgraduate degree courses (Adetunji, 2023). Yoruba has been explored in rigorous academic research at the tertiary level. Literary works abound in Yoruba in the three genres of poetry, drama and prose while all the genres of oral literature have equally been documented in the language.

Although the Federal Government is losing grip of Language Policy implementation at the pre-primary to public secondary schools, effort is expended in order to implement the Language Policy of the teaching and learning of Yoruba as the second language (L2) in all the Federal Government Colleges also called Unity Schools. The Federal Government with the establishment of the National Commission for Colleges Education (NCCE) in 1989 directed the NCCE to mandate all Colleges of Education in [Nigeria to start the teaching and learning of Yoruba as a second language.

Moreover, the Nigerian Educational Research, and Development Council (NERDC), has developed curricula on Hausa, Igbo Yoruba as a second language for the Junior Secondary School to replace the former one that had so many problems. The Federal Government established National Institute for Nigerian Languages in Aba, Abia State in order to help in the production of Nigerian language L2 teachers. Students who studied Yoruba as second language are expected to go to the National Institute for Nigerian languages (NILAN) Aba for their Degree Courses in Yoruba as a second language, Oyebanji (2012).

The teaching and learning of Yoruba as a second language in Nigeria and as a sign language in Britain, United State of America (USA), Germany and many other countries all over Europe and the world has extended the frontiers of knowledge in the teaching and learning of Yoruba Language. The Yoruba language being one of the three national languages qualifies to be studied as a subject in schools in Nigeria. In implementing the policy which states that every child shall learn one of the three Nigerian languages (NPE, 2013), some factors inhibit the success of this policy such as, improper monitoring on the part of the Government to enforce implementation and promotion of indigenous languages, challenges of security; inadequate number of trained teachers and fund. For instance, in the

Northern parts of Nigeria, both Yoruba and Igbo ought to be taught in the schools to Hausa native speakers while Igbo and Hausa languages should be school subjects in Southwest and then Hausa and Yoruba in the Eastern States. This policy could not yield the expected outcome because the government had failed at the implementation stage.

Similar to the above is the error committed in the delivery of quality basic education. At the nursery level, the school should be an extension of the home in the language use and in methods of teaching; this is more of the reason why play way method is recommended at this level and child's mother tongue as the medium of instruction. All private schools in Nigeria are culprits as regards this. The fact that no sanction was placed on them for non-compliance on the issue and parents' preference for the English language, most public schools' teachers also adopt the use of the English language in teaching at lower primary, thereby rendering the provision made for language use at this level less effective (Abijo, 2014).

Another problem is that some private primary schools do not offer Yoruba as a subject at all, while some start at primary four. When these categories of pupils get to secondary school, it is difficult to teach them the basic concepts they have missed in primary education. As a result, some of them usually lose interest or simply claim that Yoruba is a difficult subject.

In addition to this is the transitional issue of the medium of instruction. Aina (2013) in his study of acquisition and learning of Li and L2 noted that a major impediment, mainly with the transitional models (i.e. the early and late exits and the bilingual medium), is that the short duration of the use of MT by the pupils does not allow the attainment of language competence needed in MT (Li) such as the Yoruba language in order to avoid the cognitive disadvantages when the pupils switch over to the second language (L2). Aina further argued that transitional bilingual education models or programmes do not usually bridge the learning gap but rather create it because of the delay in understanding the subject. It is also known that if the first language is allowed to stagnate when a child begins school and another language is introduced as the sole school language, there is a great risk of incomplete development of both languages. This is evident in academic performance of a large percentage of students in both English and Yoruba languages in Nigeria. Adetunji, (2023) noted that apart from the oral mode that has vanished from the school curriculum, we hardly find schools where an interesting short story, collection of poems or children's bedtime folk tales in the indigenous language are recommended.

There are few literary pieces published because creative writers in Yoruba have not been motivated to write for pupils at that level, knowing full well that there are willing readers. Meanwhile, children's literatures in English abound, and it is commonplace to find them recommended to the pupils to develop their reading skills. It is also noted that when such children read the pieces in English, their level of proficiency cannot be faulted, but when they are asked to read a piece in Yoruba, they faulter because texts that are meant for .beginners in Yoruba language reading even when recommended are not emphasized. This is a problem in teaching Yoruba Language and inculcating the cultural values because lessons that ought to be previously learnt are missed both at home and school.

Lack of motivation in the teaching and learning of Yoruba language is another problem. Parental attitudinal disposition to learning Yoruba Language has a great impact on language preference and students' dedication to learning. Some parents hardly buy Yorba textbooks for their wards, assist in doing homework and encourage children to read Yoruba textbooks and literature books. Abijo (2014) and Aina (2013) observed many modern and elitist Yoruba children cannot read Yoruba alphabets with and that western culture

now dominates our local cultures because we are consuming their mass media messages. Fajola, (2018) affirmed that imposition of a foreign language on Africa and many of its consequences have suppressed the African languages and undervalued their culture. Thus, the African child is being exposed exclusively to a culture that is a product of a world external to him. Since entire Internet facilities are communicated in English, the Yorubá elites that are already hostile to the language now find themselves a means of complete alienation, that is, the Global Information Capitalism, (Abijo, 2014). On face book, twitters, and the rest, youth either write in English language or code mix with pidgin. The acts of code mixing and switching are becoming habitual and it is affecting both the spoken and written form of the Yoruba language among students.

Despite the "save our indigenous languages" cries by researchers and scholars, Adetunji(2023) observed that when the drums were rolled out on Tuesday March 17, 2009 in Abuja to launch the rebranding initiative of late President Yar'adua's administration, so followed a catalogue of social vices: corruption, drug dealing, cybercrime, advance fee fraud and negative attitudes towards nation building all detracted from the country's image; no mention was made of the uninspiring attitudes of Nigerians towards promoting their local languages. The study pondered on what identity has a country when its linguistic heritage is seriously threatened. This was corroborated by Abijo (2014),

> 'The death of any language is the loss of knowledge contained in that language. The weakening of any language is the weakening of its knowledge-producing potential. It is a human loss. Each language, no matter how small, contains the best knowledge of its immediate environment: the plants and their properties, for instance. Language is the primary computer with a natural hard drive,' (p. 10).

It is of great importance to strengthen Yoruba language literacy if indeed the heritage would be preserved. With the declining interest in the speaking and study of Yoruba Language, it becomes imperative to globalise its teaching through the integration of technology in Yoruba Language instruction. The integration of digital tools has become increasingly crucial in the effective teaching and learning of Yoruba Language. In the 21st century modern educational terrain where technology infiltrates every aspect of our lives, the incorporation of digital resources can significantly enhance the learning experience for students. One key advantage of using digital tools is the ability to cater to diverse learning styles. (Oyebanji, 2012). Interactive multimedia content, such as videos, animations, and simulations, can engage visual and kinesthetic learners, while audio resources can support auditory learners. This multi-modal approach helps to accommodate the varying needs of students, ensuring that the content is accessible and engaging for all (Belk, 2021).

Moreover, digital tools offer unprecedented opportunities for personalized learning. Adaptive learning platforms can assess a student's progress and tailor the content and pace of instruction accordingly. This allows for a more targeted and efficient learning process where students can focus on areas that require more attention, while accelerating in subjects they have already mastered. Furthermore, the integration of digital tools enables seamless collaboration and communication between teachers and students. (Craig 2012).

An important technology, important digital tool, that can be integrated into the teaching and learning of Yoruba Language is Artificial Intelligence (AI). Artificial Intelligence (AI) refers to computer system capable of performing complex tasks that historically only humans could do, such as reasoning, making decisions, or solving

problems (Agomuoh and Larsen, 2023). The clamour for the integration of AI has been on the increase the world over. The call for the adoption of AI digital tools in teaching languages is rapidly expanding in many countries and is now seen worldwide as both a necessity and an opportunity for improving and enhancing the education offered to citizens across the globe. (UNESCO, 2022). The introduction of computer technologies to teaching and learning which occurred decades ago has accelerated the innovation of digital tools in classroom business. The incessant proliferation of digital tools and media is encouraging many of language teachers to rethink their subject development and classroom strategies. The adoption of these exciting novel tools such as AI has grafted digital elements onto the traditional classroom methods and also uncovers many of the basic traditional pedagogy. However as beneficial as AI is to effective teaching of languages as documented in literature, its use in the teaching of indigenous languages, and by extension, the Yoruba language, may not come without examining the challenges associated with it. According to Adebiyi (2024), although AI can create a number of opportunities for educational activities, using AI in education can also create a number of risks and challenges. From risks to individuals, to the integrity of the educational system as a whole. In order to realise the opportunities of AI in education, there is the need to be mindful of these risks when considering whether it is appropriate to use AI, and how in Yoruba Language instruction.

For example, the use of AI creates risks to the functioning and integrity of the educational system as a whole. The increasing use and availability of AI systems in schools can lead to an overreliance on AI and a loss of critical thinking skills. This overreliance may stem from altruistic aims, such as taking advantage of the efficiencies that AI can create, but it can lead to more dangerous results, such as plagiarism and academic dishonesty where students use AI-generated content as their own. Overreliance decreases the ability of students to truly learn, undermining the education system as a whole (Yellend and Brandi, 2020). In addition, some teachers face significant challenges such as the lack of training and professional development opportunities. Teachers who are not confident in their technological skills may feel overwhelmed and hesitant to integrate digital tools into their instruction. Also, insufficient infrastructure, such as limited access to computers or unreliable internet connectivity can impede the effective use of digital tools. Without adequate support, even tech-savvy teachers might struggle to utilize AI digital tools effectively. (Alsher, 2022).

Statement of Problem

There has been a surge in the clamour for use artificial intelligence (AI) to advance language education, including indigenous languages, Yoruba Language inclusive. The use of self-learning predictive models, machine-learning systems, and automated data processing through Natural Language Processing in these language technologies are expected to create innovative spaces for Yoruba language education. These language technologies are anticipated to open up new learning opportunities, through its revitalisation and increased functionality. However, certain challenges might be attendant to the deployment of AI digital tools in the teaching and learning of Yoruba Language in schools. This study, therefore, investigated the perspectives of the Yoruba Language teachers on the challenges of using AI in the teaching and learning of Yoruba Language in selected senior secondary schools in Ibadan, Nigeria.

Objective of the Study

The objective of the study is to:
Investigate the perception of Yoruba Language teachers on the challenges of using AI tools in their instructional practices.

Research Questions

This study answered the following research question:

What is the perception of Yoruba Language teachers on the challenges of using AI tools in their instructional practices?

Scope of the Study

The study explored the perception of Yoruba Language teachers on the challenges of using AI digital tools in Yoruba Language instruction in Ibadan, Nigeria. It covered teachers of Yoruba Language from 30 randomly selected senior secondary schools in the three Local Government Areas in Ibadan, Nigeria.

Significance of the Study

The findings and recommendations of this study would be of invaluable benefits to the teaching and learning of Yoruba Language in schools. The findings and recommendations would be of particular importance to teachers of Yoruba Language in senior secondary schools who may benefit from more effective use of AI technology in the classes. Equally, the administrators in the secondary schools may learn the value and benefit of investing in various digital tools in teaching of Yoruba Language and the critical role of having effective ICT policies in the secondary schools for their effective use. The Nigerian Educational Research Development Council (NERDC) may benefit from the findings and recommendations of the study in respect to production of quality digital resources for effective teaching and learning of Yoruba Language. In addition, they will gain insights on how to direct curriculum development in respect to Yoruba Language to accommodate use of AI technology. Future scholars cum researchers interested in the area of AI digital tools in teaching and learning of Yoruba Language may find this study a valuable reference point.

Methodology

This study adopted the survey design because it allows data to be collected from a sample with the aim of discovering the views of teachers on the challenges of using AI in their instructional practices. The population of this study comprised all teachers of Yoruba Language in 30 selected senior secondary schools in Ibadan, Nigeria. In selecting the participants, three Local Government Areas (LGAs) were randomly selected from the existing 11 in Ibadan. From each LGA, 10 senior secondary schools were randomly selected making a total of 30 schools. All the Yoruba Language teachers in the selected schools were enumerated. The instrument used was Teachers' Perception on the Challenges of Using Artificial Intelligence Questionnaire (r=0.78). The questionnaires were administered with the help of trained research assistants. Descriptive statistics of means, standard deviation, percentage and frequency counts were used to analyse the data collected.

Results

Research Question: What is the teachers' perception of the challenges of using AI in the teaching and learning of Yoruba Language in schools?

Table 1: Descriptive Statistics of Teachers' Perception of the challenges of using AI in the teaching and learning of Yoruba Language in schools.

S/N	Items	SA	A	D	SD	$\bar{x}$	S.D.
1	AI stifles development of critical thinking in students	26 (72.2%)	10 (27.8%)	-	-	3.72	.454
2	Teachers find it difficult to adapt to AI	21 (58.3%)	14 (38.9%)	1 (2.8%)	-	3.56	.558
3	There is limited ease of accessibility to AI.	-	4 (11.1%)	11 (30.6%)	21 (58.3%)	3.47	.696
4	Teachers are not adequately prepared to use AI.	1 (2.8%)	16 (44.4%)	9 (25.0%)	10 (27.8%)	2.78	.898
5	It encourages plagiarism	21 (58.3%)	13 (36.1%)	1 (2.8%)	1 (2.8%)	3.53	.736
6	AI is cost intensive	15 (41.7%)	9 (25.0%)	11 (30.6%)	1 (2.8%)	1.94	.924
7	Use of AI can lead to addiction to technology.	21 (58.3%)	12 (33.3%)	3 (8.3%)	-	3.50	.655
8	Poor internet connectivity can hinder effective use of AI in class	-	1 (2.8%)	18 (50.0%)	17 (47.2%)	3.44	.558
9	Many students do not have access to android phones	17 (47.2%)	15 (41.7%)	3 (8.3%)	1 (2.8%)	3.33	.756
10	It reduces teacher-student interaction in class	1 (2.8%)	1 (2.8%)	14 (38.9%)	20 (55.6%)	3.47	.696
	Threshold = 2.50	**Weighted Average**				**3.34**	

Table 1 indicates the perception of teachers about the challenges of using AI in the teaching and learning of Yoruba Language in schools. This is revealed by the teachers' responses to each of the items as expressed in percentage and mean. The results show that all the teachers agreed that AI stifles critical thinking skill ($\bar{x} = 3.72$); majority of the teachers agreed that teachers find it difficult to adapt to AI ($\bar{x} = 3.56$); majority of the teachers disagreed that there is limited ease of accessibility to AI. ($\bar{x} = 3.47$); majority of the teachers disagreed that teachers are not adequately prepared to use AI. ($\bar{x} = 2.78$); majority of the teachers agreed that AI encourages plagiarism ($\bar{x} = 3.53$); majority of the teachers agreed that AI is cost intensive ($\bar{x} = 1.94$); majority of the teachers agreed that the Use of AI can lead to addiction to technology ($\bar{x} = 3.50$); majority of the teachers disagreed that poor internet connectivity could hinder effective use of AI in class ($\bar{x} = 3.44$); majority of the teachers agreed that many students do not have access to android phones($\bar{x} = 3.33$); majority of the

teachers disagreed that AI reduces teacher-student interaction in class ($\bar{x} = 3.47$)

In conclusion, from the perspective of the teachers, the challenges of using AI in the teaching and learning of Yoruba Language are that AI stifles critical thinking skill, teachers find it difficult to adapt to AI, AI encourages plagiarism, AI is cost intensive, use of AI can lead to addiction to technology and that many students do not have access to android phones to access AI. This is revealed by the Weighted average of 3.34 which is higher than 2.50 which is the benchmark.

Discussion

The findings revealed that that Yoruba Language teachers perceived the challenges of using AI to teach Yoruba Language as stifling critical thinking of students, teachers' difficulty in adapting to the use of AI in class, encouraging plagiarism, being cost intensive, leading to addiction to technology and students not having access to android phones to access AI. These revelations accord perfectly with the report of Abdullah et al., (2022), Alsher (2022) and Agomuoh and Larsen (2023) that use of AI in language teaching and learning come various challenges. Among which are as identified in this study.

Conclusion

This study sought to ascertain the perspectives of the teachers of Yoruba Language on the use of AI in the teaching and learning of Yoruba Language in senior secondary schools in Ibadan metropolis and concluded that there is still much to be done in developing the trend of digital tools in Yoruba Language education and that effective integration of AI into the teaching and learning of Yoruba Language cannot be achieved without addressing some impediments that come along with its use as viewed by Yoruba Language teachers.

Recommendations

Arising from the findings from this study, it is recommended that:

1. School management body should establish an AI Support Centre in their schools that will provide awareness and support its application in the teaching of Yoruba Language.
2. Schools should organize digital training workshops for their teachers acquaint them to the possible constraints in the use of AI in the teaching and learning of Yoruba Language.

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Artificial Intelligence and the Teaching of English Language Writing Skill

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Abstract

Writing ability is a crucial means of communicating clearly and professionally in English, as well as expressing ideas, thoughts, and feelings. It is regarded as a life skill preservice teachers need to be proficient in it. Despite its importance, preservice teachers at the Federal College of Education (Special), Oyo, continue to demonstrate deficiencies in vocabulary, grammar, and creative expression. Recent advances in artificial intelligence (AI) have introduced tools such as Grammarly, QuillBot, and ChatGPT, which provide real-time feedback, grammar correction, paraphrasing, and idea generation. However, little is known about the extent to which Nigerian preservice teachers are aware of, perceive, and apply these tools in academic writing. This study employed a descriptive survey design to investigate students' awareness, perceptions, and use of AI tools among 200-level English language learners at the Federal College of Education (Special), Oyo. Data were collected using a structured questionnaire administered to 100 randomly selected preservice teachers. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used for analysis. Findings revealed that students demonstrated moderate to high awareness and perception of AI tools (overall mean = 3.37) and (overall mean = 3.09), respectively, with students recognising AI's usefulness in improving writing while also expressing concerns about reduced creativity, honesty issues, and overreliance. Actual application of AI tools was low (overall mean = 2.38). The study concludes that although preservice teachers are aware of AI technologies and perceive them as beneficial, they lack the skills and confidence to use them effectively, largely due to inadequate knowledge of prompt design and limited institutional support. It recommends structured training on AI-assisted writing, integration of AI literacy into writing courses, clear institutional guidelines on ethical use, and increased access to AI tools. Bridging the gap between awareness and application will enhance students' writing proficiency and foster responsible adoption of AI in Nigerian higher education.

Keywords: Academic writing, Artificial intelligence, Preservice teachers, Awareness, Perception, Application, Nigeria

Introduction

Writing is a crucial skill in higher education across all subject areas. It is a necessary skill for learners' everyday communication used in expressing feelings, thoughts and ideas. In addition to being a means of achieving academic proficiency, writing in English is not only essential for academic achievement but also serves as a bridge for job prospects in Nigeria, as a case study. Students need it to take notes in class, answer examination questions, carry out academic writing and many more. Similarly, final-year research projects are presented in writing. Proficiency in writing is frequently demonstrated beyond the classroom. Writing skills are displayed when preparing application letters or a curriculum vitae. One cannot undervalue writing among working-class people.

According to Obuasi (2012), writing is a form of creative expression that entails bringing an idea or reality to life in a distinctive way to express own thoughts. Accordingly, writing is the act of putting ideas, feelings, opinions, and discoveries onto paper through the use of words. In this way, writing is more than just putting words on paper; it is also organising thoughts, emotions, opinions, and discoveries into a logical statement. It is a social and personal instrument that facilitates academic participation, self-expression, and knowledge preservation. Therefore, writing is inevitable in

a functioning society. As a result, writing is essential to a functional society since it supports cultural growth, education, government, and business. Writing skills are especially important in academic settings since they measure how well students can express their ideas, support their positions, and engage in critical discussion.

The ability to produce excellent writing is the first and most important step in achieving academic success. According to Zhang (2013), having a strong command of English writing skills is essential for improving students' writing performance. Writing requires students to combine a wide range of abilities, such as logical argumentation, analytical aptitude, critical thinking, and good communication. It is a fundamental component of academic success. Thus, writing is a key component of educational growth and is frequently included in student assessments. As a result, having strong English writing skills becomes one of the key requirements for certified EFL graduates (Azizah & Budiman, 2017). In the same vein, there has been a positive correlation between students who are proficient in writing and their overall academic performance (Adebayo, 2022).

Writing is taught and tested as essay writing among preservice teachers both as a departmental course and a general course, particularly, students in the Federal College of Education, Special, Oyo. Preservice teachers are required to write letters of different types, compositions such as descriptive, narrative, explanatory or argumentative essays. Essay writing instruction in general English at college of education, including FCES Oyo, aims to foster critical thinking and creativity in addressing real-world issues; proficiency in the English language for efficient communication; meaningful participation in discussions spanning a wide range of subjects; acquisition of knowledge and skills for understanding the foundations and nature of human knowledge, values, and action; and the advancement of professional competence (National Commission for Colleges of Education, 2020). These skills are inevitable as they are expected to have at least a pass in them before graduation.

Despite these values of essay writing, studies have shown that preservice teachers are deficient in it. Evidence from their scripts and previous studies shows that many of them struggle with vocabulary competence, creative thinking, and grammatical competence in grammatically correct sentences, most especially, teachers' teaching strategies were all cited by Fakeye (2017) and Ogunyemi (2020). In finding solutions to these problems, different aspects have been carried out by scholars, including Adebayo (2022) and Oluwadare (2021), to address the lack of writing proficiency among students with limited research on technology-integrated assistance tools like artificial intelligence tools, such as ChatGPT, Grammarly and Qullibot. These tools aid the teaching and learning of English writing skills. The integration of technology in education, which uses artificial intelligence (AI) tools to revolutionise teaching and learning processes worldwide, has received less attention from research, even though many of them have significantly improved writing instruction and learning.

Considering the kind of methods lecturers adopt in their classes, preservice teachers can make use of AI tools to bridge the gap that may be missing in the classroom. Such as in large class sizes, time constraints, and heavy workloads make it challenging to provide tailored feedback that takes into account each learner's particular writing demands, even if teachers are crucial in helping students. Most preservice teachers rarely get frequent feedback on the areas of concern; many students do not receive prompt or thorough edits that may help them become better writers. According to Udosen and Jude (2014), only a few lecturers develop the habit of providing feedback on students' performance. In the same study, it was affirmed that students frequently do not get

much feedback about their development at the teacher education level.

This disparity has prompted pupils to look for additional help outside of the classroom, such as using AI tools to improve their writing. In contrast to conventional strategies, these tools offer rapid feedback, allowing students to work on their writing at their own pace, practise on their own, and correct mistakes promptly.

Technology innovation in recent years has opened up new avenues for addressing these issues. Numerous artificial intelligence (AI) applications have become accessible, including Grammarly, QuillBot, ProWritingAid, and ChatGPT. Artificial intelligence has an array of uses in education. According to Raja and Nagasubramani (2018), it is incorporated into the curriculum as a tool to improve the learning process overall as well as an instructional delivery system. Ekeh (2024) asserts that AI tools that include grammar checkers and language editors are excellent resources for article writers. These grammar checks look for errors in word choice, syntax, spelling, articles, pronoun usage, and subject-verb agreement, among other areas that other checkers overlook. Research conducted globally indicates that artificial intelligence (AI) tools not only increase linguistic accuracy but also boost students' writing confidence and motivation. According to Umoh, Uzoigwe, and Sunday (2024), artificial intelligence (AI) tools offer tailored learning experiences that let students' study at their own speed while addressing their unique deficiencies. These programs include real-time grammar correction, paraphrasing, vocabulary suggestions, and even generating ideas. Although these techniques have been effectively used in many fields, including business and healthcare, their application in Nigerian educational settings is still in the early stages, and some are relatively unexplored (Uzoigwe, 2023).

On this note, this study investigated students' awareness, perception of and use of these tools in learning environments in FCES Oyo. By doing this, it hopes to clarify the advantages and disadvantages of incorporating AI into language instruction, providing information that could direct pedagogy, policy, and the responsible use of technology in Nigeria.

Statement of the Problem

Writing is a crucial skill among undergraduates in tertiary institutions in Nigeria, particularly in the Federal College of Education, Special, Oyo. Students need to master it as it is needed to take lecture notes, write examinations and projects, which are prerequisites for graduation. Hence, it should be taught effectively for students to master the skills. Despite the importance of the core skills of English language writing, students have continued to show deficiencies. Evidence from students' scripts and reports showed that students struggle with vocabulary competence, creative thinking, and grammatical competence, among others. Scholars support the use of continuous and frequent practice and feedback as a form of improving students' performance in English language writing.

It is challenging for lecturers in tertiary institutions to give tailored criticism because of issues including large class numbers, demanding teaching workloads, and time restraints, especially in educational institutions like the Federal College of Education (Special), Oyo. Preservice instructors frequently lack prompt feedback and direction that might enhance their writing abilities. A growing number of students are using AI-powered writing applications to get help outside of the classroom as a result of this feedback gap. In Nigerian higher education, however, not many facts have been established about how much preservice teachers' awareness, perception, and usage of these tools.

Previous studies have shown that AI technology-driven tools, such as ChatGPT, QuillBot and Grammarly, offer potential

solutions to these problems. The adoption of AI in Nigerian tertiary institutions is still at an early stage. Understanding their awareness, perception, and practices will provide insights into the potential of AI integration to complement traditional instruction, boost writing proficiency, and shape future pedagogical and policy beliefs in Nigeria. Therefore, there is a need to examine how preservice teachers' awareness, perception, and use of AI technologies for writing, specifically in FCES Oyo.

Objectives of the Study

This study's primary objectives of this study were:

1. To assess students' awareness of academic writing using artificial intelligence (AI) applications;
2. Examine students' perceptions of using AI tools to improve their academic writing abilities, and to
3. Examine how students use AI tools in their academic writing assignments.

Research Questions

1. To what extent are students aware of and knowledgeable about AI tools for academic writing?
2. What are students' perceptions about using artificial intelligence (AI) technologies for academic writing?
3. To what extent do students use AI tools in their academic writing?

Methodology

A descriptive survey technique was used in this study to examine students' awareness, perception, and use of tools that utilise AI in writing. The survey approach was found suitable since it enables the researcher to get extensive data on students' awareness, perceptions, and usage patterns in a classroom environment without adjusting variables.

The study's participants included all 200-level English language students at the School of Languages of the Federal College of Education, Special, Oyo, where writing is a compulsory course. Out of 134 students who registered for the course, only 100 students were readily available. This is why the study used a purposive sampling method with 100 respondents. The English Language Writing Perception and Experience Questionnaire (ELWPEQ), a structured questionnaire with a five-point Likert scale from Strongly Agree (5) to Strongly Disagree (1), was used in the study, which was divided into four sections: Data on students' demographics (gender and age), students' awareness, perception, and use of AI in writing. The researcher gave the instrument to two lecturers in the Department of Science of the School of General Studies Education, who are experts in the field of research and methodology, to assess for clarity and input. Their feedback was incorporated to improve the questionnaire, while a reliability coefficient of 0.78 was achieved after the instrument was given to 20 participants who were not involved in the study. The students offering ENG 221 were given the questionnaire by the researcher during a typical writing class period, with prior permission from the course lecturer. Participation was voluntary. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to analyse the responses to the Likert-scale items to establish the knowledge, attitudes, and applications of AI among the students.

Results

To what extent are students aware of AI tools for academic writing?

Table 1: Knowledge of AI in Academic Writing

Item	Statement	Strongly Agree/Agree	Disagree/Strongly Disagree	Mean	SD
1.	I am aware of AI tools in writing.	72%	28%	3.6	1.0
2.	I know specific AI tools used in writing.	65%	35%	3.4	1.0
3.	I am aware of grammar-checking tools.	70%	30%	3.5	0.9
4.	I know about AI generating ideas.	62%	38%	3.3	1.1
5.	I am aware of paraphrasing and summarising tools.	68%	32%	3.4	1.0
6.	Knowledge of AI for referencing	58%	42%	3.1	1.1
7.	Awareness of plagiarism checkers	74%	26%	3.7	1.0
8.	Knowledge of AI for structuring writing	60%	40%	3.2	1.0
9.	Knowledge of AI adapting to writing styles	55%	45%	3.2	1.0
10.	Awareness of ethical concerns	69%	31%	3.5	1.1

Overall, Awareness Mean = 3.37
N=100

Table 1 shows that students' awareness and understanding of AI technologies in academic writing range from moderate to high. According to the overall mean score of 3.37, which indicates a generally positive attitude towards the use of AI, the majority of respondents are not only aware of but also have some understanding of the various ways AI is being utilised in the writing process.

According to the statistics, students are generally well-informed about AI tools for writing, showing proficiency with basic features and increasing familiarity with more complex ones. This puts them in a good position to receive more training and incorporate AI technologies into their teaching methods.

What are students' perceptions about using artificial intelligence (AI) technologies for academic writing?

Table 2: Students' perception of the use of AI tools in writing

Item	Statement	Strongly Agree/Agree	Disagree/Strongly Disagree	Mean	SD
1	AI makes writing easier.	62%	38%	3.3	1.0
2	AI improves writing quality.	58%	42%	3.1	1.0
3	AI reduces creativity.	54%	46%	3.0	1.2
4	AI reliable for grammar/clarity.	60%	40%	3.2	1.0
5	AI-generated content lacks originality.	55%	45%	3.0	1.1
6	AI raises honesty concerns.	68%	32%	3.4	1.1
7	AI boosts writing confidence.	50%	50%	3.0	1.0
8	Teachers should allow AI use.	45%	55%	2.7	1.0
9	Overreliance harms writing skills.	62%	38%	3.3	1.0
10	AI has more advantages than disadvantages.	48%	52%	2.9	1.1

Overall Perception Mean = 3.09 (Moderate)
N=100

Table 2 shows that students have mixed attitudes towards using AI in writing, reflecting both recognition of its benefits and concerns about its drawbacks. Their attitudes show a cautious yet balanced stance, suggesting they view AI as helpful in limited ways but not without significant risks.

To what extent do students apply AI tools in their academic writing?

Table 3: Application of AI Tools in Academic Writing

Item	Statement	Agree/Strongly Agree (%)	Disagree/Strongly Disagree (%)	Mean	SD
1	I use AI for grammar and spelling in my writing.	38%	62%	2.6	1.0
2	I use AI to generate ideas when writing.	30%	70%	2.4	1.0
3	I use AI for paraphrasing.	35%	65%	2.5	1.0
4	I use AI for editing drafts.	32%	68%	2.4	1.0
5	I use AI for plagiarism checking.	28%	72%	2.3	1.0
6	I use AI for referencing and citations.	26%	74%	2.2	0.9
7	I use AI for rephrasing my ideas when writing.	34%	66%	2.5	1.0
8	I use AI for structuring reports.	29%	71%	2.3	1.0
9	I use AI for translation and simplification of ideas when writing.	31%	69%	2.4	1.0
10	I use AI to write my project.	25%	75%	2.2	0.9

Overall Application Mean = 2.38 (Low)

Table 3 shows that students use AI tools sparingly in their academic writing. According to agreement levels that did not surpass 38% on any given issue, the majority of students opposed or strongly disagreed with the use of AI in their writing task. This implied that preservice teachers rarely use AI in their writing.

Discussion of Findings

The study examined the knowledge, attitudes, and use of AI tools for academic writing by preservice teachers at the Federal College of Education (Special), Oyo. The results showed that preservice teachers have a moderate to high level of awareness and perception regarding AI tools for academic writing, even though their perceptions and actual use of these technologies vary considerably. This suggests that while students are familiar with basic AI writing features, their knowledge of specialised functions remains limited. Additionally, students expressed a positive perception of the usefulness of AI tools. The findings align with those of Nnaemeka and Ogunbadejo (2024) and Ekeh (2024), who found that students' awareness of AI tools is high among undergraduates, while it contradicts the findings of Anih and Ukeh (2024), who reported that students have a poor awareness of AI tools. This implies that, although students are familiar with the most fundamental and widely used AI techniques, their understanding of more complex applications remains limited. An overall awareness mean score of 3.37 provides a solid basis for additional targeted training. Additionally, the study found that students' actual use of AI is generally low. Despite recognising AI's awareness, perception, and advantages, students rarely utilise it in their academic work, as indicated

by the overall mean score. This suggests a significant gap between awareness/perception and actual use. This finding aligns with Owan et al. (2025), who reported low utilisation of AI among students. However, it contrasts with the findings of Idris and Umar (2024), who observed that students employed AI tools in their academic pursuits. This may be due to students not having enough practical experience in accessing, exploring, and applying these tools to their writing.

Conclusion

According to the study's findings, students at the Federal College of Education, Special, Oyo, have a moderate to high level of awareness of AI tools for academic writing, especially those that deal with plagiarism and grammar checks. Their opinions, however, are conflicted, striking a balance between fear, a lack of understanding about its application, and skill development with an appreciation of AI's benefits. A gap between knowledge and practice is evident in the low practical implementation of AI tools, despite comparatively high awareness. Students are therefore in a unique position: they have the fundamental knowledge to use AI in a meaningful way, but they need more direction, instruction, and institutional support to do it responsibly.

Recommendations

Based on the findings, the following recommendations were:

1. Effective prompt design should be taught as part of the training. Students will be able to use generative AI systems more effectively as a result.
2. To guarantee that students gain proficiency and critical awareness, writing courses should incorporate AI literacy, emphasising both technical application and ethical bounds.
3. To guarantee that students utilise AI tools for real academic advancement, administrators at tertiary institutions of learning should develop guidelines for acceptable AI use and offer materials for training on moral and efficient AI use.

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AI as a Co-Teacher: Rethinking the Role of Language Educators in the Age of Automation

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Abstract

This paper explores the transformative role of Artificial Intelligence (AI) in English as a Foreign Language (EFL) and English as a Second Language (ESL) education, framing AI not merely as a tool but as a co-teacher that complements human instruction. It examines how AI technologies such as natural language processing, intelligent tutoring systems, and speech recognition facilitate personalized learning, real-time feedback, and scalable instruction. While AI enhances efficiency and learner autonomy, the irreplaceable roles of human educators as facilitators, emotional supporters, content curators, and ethical guardians remain central to effective language instruction. The paper also discusses the challenges of AI integration, including algorithmic bias, privacy concerns, technical limitations, and the risk of teacher de-skilling. It emphasizes the need for AI literacy, pedagogical adaptation, and continuous professional development to ensure a balanced and ethical human-AI partnership. Future directions call for empirical, cross-cultural research to guide responsible innovation. Ultimately, the paper argues that the future of language education lies in synergizing machine intelligence with human pedagogical values to foster inclusive, engaging, and ethically sound learning environments.

Keywords: Artificial Intelligence, Language Education, Co-teacher, Automation, Educational Technology, Teacher roles

Introduction

The integration of Artificial Intelligence (AI) in education, particularly within English as a Foreign Language (EFL) and English as Second Language (ESL) classrooms is revolutionizing traditional pedagogical paradigms. As technological innovations reshape the educational landscape, AI is increasingly positioned as a **co-teacher**, offering tools that augment instructional delivery and support learner engagement (Zawacki-Richter et al., 2019). This paradigm shift presents both **promising opportunities** and **significant challenges** for language educators and learners alike.

AI in education refers to the use of intelligent systems that analyze data, adapt to learners' needs, and automate instructional tasks (Luckin et al., 2016). In EFL/ESL settings, AI-powered tools such as intelligent tutoring systems, speech recognition applications, and writing assistants are facilitating pronunciation practice, grammar correction, vocabulary acquisition, and personalized feedback (Wang et al., 2020). These innovations enable educators to redirect their focus toward **higher-order pedagogical goals,** including the development of critical thinking, intercultural communication, and learner autonomy (Holmes et al., 2019).

Despite these advancements, the role of the human-teacher remains indispensable. Teachers offer **emotional intelligence, adaptability, and cultural sensitivity** elements that AI, as of yet, cannot replicate (Selwyn, 2019). While AI excels at delivering

data-driven insights and scalability, it lacks the capacity to interpret social cues, respond empathetically, or build meaningful relationships and skills central to effective language teaching and learning (Winne & Baker, 2013). The digital revolution has prompted profound transformations in education. Among the most influential innovations is Artificial Intelligence (AI), which is being integrated into classrooms across various disciplines, including language education. AI applications such as intelligent tutoring systems, natural language processing (NLP), speech recognition, and adaptive learning platforms have demonstrated the capacity to assist and enhance teaching practices (Luckin et al., 2016). However, as these technologies assume more responsibilities traditionally managed by educators, questions arise about the evolving role of human teachers.

Therefore, achieving balance in education necessitates the collaboration between artificial intelligence and human efforts. Human educators interpret the **contextual subtleties of communication**, nurture motivation, and guide learners through the emotional and cognitive complexities of acquiring a second language (Chen et al., 2021). Recognizing this **synergy** between human and machine intelligence allows educators to embrace technological advancement while upholding core pedagogical values.

The integration of Artificial Intelligence into education is transforming the field, especially in the areas of personalized and adaptive learning. Traditionally, education has followed a one-size-fits-all approach, where teaching strategies and materials are standardized, often failing to address students' diverse learning needs. This rigidity can result in student disengagement and a decline in academic achievement, particularly for learners who require additional support or a different pace of instruction. In response to these challenges, AI has emerged as a promising tool that can collaborate with human teachers to create individualized learning pathways for each student. AI technologies like machine learning, natural language processing, and data analytics enable the processing of a huge amount of information to the deepest detail and provide actionable insights from it. AI in education can analyze the learning pattern, preferences, and progress of students for customized instruction based on the needs of a particular learner. That flexibility not only helps students learn better but also gives the teachers data that aids in instruction.

This paper provided educators with actionable insights into **balancing AI capabilities with the irreplaceable human aspects** of teaching. Through thoughtful integration, language teachers can craft a **personalized, inclusive, and engaging learning environment;** one that leverages AI's strengths while fostering the interpersonal connections fundamental to language acquisition.

The Emergence of AI in Language Education

AI technologies have made significant strides in language learning through applications like Duolingo, Grammarly, ChatGPT, and Google's Read Along. These tools employ Natural Language Processing (NLP), machine learning, and deep learning to offer learners personalized, immediate, and context-aware feedback (Wang et al., 2020). For instance, AI-powered chatbots can mimic real-life conversations, giving students the opportunity to practice speaking and improve their fluency beyond the walls of the classroom (Zawacki-Richter et al., 2019). These chatbots provide an interactive and low-pressure environment where learners can communicate freely, make mistakes, and receive instant feedback, something that traditional classroom settings may not always afford due to time or teacher constraints. AI's data-driven capacity also allows for real-time tracking of learners' progress and the customization of content to

individual needs, embodying principles of differentiated instruction (Holmes et al., 2019). The emergence of AI in language classrooms, especially those focused in English as a Second Language (ESL) and English as a Foreign Language (EFL) has introduced intelligent systems that facilitate personalized instruction, real-time feedback, and autonomous learning environments.

At its foundation, Artificial Intelligence in education involves creating computer programs that can imitate some of the ways humans think and learn—such as making decisions, recognizing patterns, and understanding language. In simpler terms, it means designing systems that can "think" and "respond" intelligently, much like a human tutor. These systems can analyze data about how students learn, adapt lessons to their individual needs, and even communicate in natural language, making learning more interactive and personalized. These systems are increasingly employed in language education through applications such as **chatbots, intelligent tutoring systems (ITS), speech recognition software, and automated writing evaluators** (Chen et al., 2021; Wang et al., 2020). For example, AI-powered platforms like Duolingo, Babbel, and ELSA Speak provide learners with immediate feedback on pronunciation, vocabulary usage, and grammar, enabling individualized and adaptive learning experiences (Zawacki-Richter et al., 2019). The driving force behind this shift is AI's ability to analyze vast amounts of learner data and adjust instruction to match individual proficiency levels and learning styles. Through Natural Language Processing (NLP), Artificial Intelligence is able to interpret and respond to students' inputs instantly, making learning more interactive and meaningful. This technology helps create conversations that feel natural and context-aware, allowing learners to receive immediate and personalized feedback. In doing so, it not only enhances language accuracy but also keeps students more engaged and motivated, as they experience a learning process that adapts to their individual needs (Holmes et al., 2019).

Moreover, AI is supporting the development of **automated assessment tools**, which streamline grading processes and free up instructional time for teachers. These systems are especially useful in assessing speaking and writing skills, traditionally time-consuming and subjective components of language instruction (Wang et al., 2020). AI also facilitates **data-driven decision-making** by providing analytics on student progress, enabling teachers to identify struggling learners and intervene appropriately (Luckin et al., 2016).

Despite these advances, the integration of AI into language education is still in its formative stages and presents challenges. Concerns include the accuracy of machine-generated feedback, the potential erosion of teacher autonomy, ethical issues surrounding data privacy, and the need for teacher training in AI literacy (Selwyn, 2019; Zawacki-Richter et al., 2019). Nevertheless, the increasing integration of AI into language education signifies a major transformation toward more blended and intelligent learning environments, where human insight and machine intelligence work together to enhance the teaching and learning experience.

As educators increasingly incorporate AI tools into their pedagogical practice, the future of language learning appears more dynamic, accessible, and personalized than ever before.

AI as a Co-Teacher

The idea of Artificial Intelligence serving as a co-teacher in educational settings, especially in language teaching, represents a move beyond seeing AI as just a supportive tool. It is now being recognized as an active partner in the teaching process, capable of collaborating with educators to facilitate instruction, adapt lessons, and enrich the overall learning experience. Johnson, Becker, and Cummins (2021) note that "as its use is

just getting under way in teaching and learning, AI returns in 2021 as a key technology", suggesting that AI is increasingly recognized as a significant contributor to instructional processes and could function as a collaborative teaching partner. Rather than replacing human educators, AI technologies increasingly function as collaborators, providing complementary support that enhances teaching effectiveness and learning outcomes (Luckin et al., 2016). In language education, AI-driven platforms like ChatGPT, Duolingo, and Grammarly exemplify this role by offering real-time conversational practice, grammar correction, pronunciation feedback, and personalized vocabulary reinforcement (Wang et al., 2020). These applications free educators from repetitive, low-level tasks and allow them to concentrate on more complex instructional goals, including promoting critical thinking, fostering intercultural communication, and supporting emotional development (Holmes et al., 2019).

The theoretical grounding for AI as a co-teacher can be found in **Vygotsky's Zone of Proximal Development (ZPD),** where learners benefit most from scaffolded support that is slightly beyond their current capabilities. AI systems serve as dynamic scaffolds by responding to learners' inputs in real time and adjusting difficulty levels accordingly (Vygotsky, 1978; Chen et al., 2021). However, unlike human co-teachers, AI lacks emotional intelligence, intuition, and ethical reasoning; areas in which human educators remain irreplaceable. One of the key benefits of AI as a co-teacher is **scalability**. Intelligent systems can simultaneously interact with hundreds or thousands of learners, making high-quality instruction more accessible, especially in under-resourced settings. Moreover, AI offers **data-driven personalization**, ensuring that instruction is tailored to individual strengths, weaknesses, and learning preferences (Zawacki-Richter et al., 2019). It also facilitates **formative assessment**, offering immediate feedback that helps learners identify and correct mistakes in real time.

Despite these advantages, the co-teacher model presents challenges. Teachers must adapt their pedagogical practices and develop **AI literacy** to effectively incorporate intelligent systems into their classrooms (Luckin et al., 2016). There are also **ethical concerns** related to data privacy, algorithmic bias, and the potential de-skilling of educators if AI is over-relied upon (Selwyn, 2019). For AI to function effectively as a co-teacher, there must be a well-balanced partnership between humans and technology, one where AI complements and enhances the teacher's role rather than replaces it. In such a relationship, technology handles routine or data-driven tasks, while human teachers provide the empathy, creativity, and critical judgment that machines cannot replicate. Teachers serve as ethical guides, emotional supporters, and cultural mediators, while AI provides real-time feedback, pattern recognition, and personalized content delivery. Embracing this collaboration enables educators to extend their reach and effectiveness, leveraging AI's efficiency while maintaining the uniquely human qualities: empathy, intuition, and moral guidance, that define authentic teaching.

Rethinking the Role of Language Educators

As AI becomes increasingly embedded in language education, the traditional role of language educators is undergoing a fundamental transformation. Educators are no longer seen merely as the exclusive providers of knowledge; instead, they are being redefined as facilitators, mentors, content curators, and ethical guides within learning spaces now shared with intelligent technologies (Luckin et al., 2016; Holmes et al., 2019). This shift calls for a reevaluation of teacher competencies and pedagogical strategies to ensure that human educators maintain a central and meaningful presence in AI-enhanced learning environments.

One of the most significant changes is the movement from **instructor-centered** to **learner-centered** pedagogy. In AI-integrated classrooms, intelligent systems handle tasks such as grammar correction, vocabulary drilling, and pronunciation feedback (Wang et al., 2020). This enables teachers to redirect their energy toward **higher-order instructional goals**, such as cultivating critical thinking, supporting intercultural communication, and developing learners' metacognitive skills (Zawacki-Richter et al., 2019).

Language educators must equally assume the role of content curators, carefully assessing AI-generated materials to confirm that they are accurate, relevant, and consistent with curriculum goals, learners' needs, and sound pedagogical principles. While AI-generated content can be rich and adaptive, it is not infallible; educators are needed to **moderate, supplement, and humanize** automated outputs (Chen et al., 2021). This is particularly important in language instruction, where cultural nuance, idiomatic expression, and pragmatic competence often escape algorithmic understanding.

As AI continues to automate various instructional and administrative functions in education, the role of language educators must evolve to complement and humanize these technologies. While AI excels at handling routine tasks like grading, error correction, and content delivery, it lacks the emotional, ethical, and cultural capacities that are essential in language learning. Thus, language teachers are increasingly taking on four critical roles: facilitators of learning, curators of content, emotional and social supporters, and ethical guardians (Luckin et al., 2016; Selwyn, 2019).

1. Facilitators of Learning: In AI-integrated classrooms, educators' transition from being the primary source of information to designers and facilitators of learning experiences. Rather than delivering content, teachers now guide students through interactive, inquiry-based, and communicative activities where AI tools are used to reinforce and extend learning (Holmes et al., 2019). For instance, while an AI chatbot can simulate language conversations, the teacher helps students interpret nuances, reflect on cultural contexts, and apply what they learn in real-world scenarios. This facilitative role aligns with constructivist pedagogy, emphasizing active learner engagement and knowledge co-construction (Vygotsky, 1978). Educators, therefore, create opportunities for collaboration, discussion, and authentic language use, transforming classrooms into dynamic spaces of exploration and communication.
2. Content Curators: AI-generated materials, although efficient and adaptive, often require human oversight to ensure accuracy, relevance, and cultural appropriateness. As curators of content, language teachers must critically evaluate and tailor AI outputs to align with curricular goals, student needs, and pedagogical intentions (Chen et al., 2021). This involves adapting vocabulary exercises, grammar explanations, and conversation prompts to better reflect the learners' socio-cultural contexts. Furthermore, educators ensure that the selected content promotes inclusivity and reflects diverse perspectives. While AI systems like ChatGPT or Grammarly generate large volumes of language data, only teachers can discern contextual sensitivity and educational value, thereby preventing misinformation or cultural bias in instruction (Zawacki-Richter et al., 2019).
3. Emotional and Social Supporters: AI lacks emotional intelligence and the ability to build meaningful relationships. As emotional and social supporters, language teachers fulfill a fundamental role in motivating, encouraging, and empathizing with students. These human interactions are particularly vital in language teaching,

a process that often carries emotional challenges such as the fear of making mistakes or the anxiety that comes with speaking in a second language (Winne & Baker, 2013). Teachers are adept at recognizing non-verbal cues, adjusting their instructional approach based on learners' affective states, and fostering a sense of belonging and psychological safety elements critical for learner confidence and persistence (Selwyn, 2019). These relational dynamics cannot be replicated by algorithms, underscoring the indispensable nature of human educators in emotionally charged learning contexts.

4. Ethical Guardians: With the proliferation of AI in education, ethical concerns such as data privacy, surveillance, bias, and algorithmic accountability have come to the forefront. As ethical guardians, language educators are tasked with ensuring that AI tools are used responsibly, equitably, and transparently in the classroom (Holmes et al., 2019; Selwyn, 2019). This role includes educating students on digital citizenship, questioning the fairness and reliability of algorithmic assessments, and advocating for policies that protect learners' rights. Teachers also play a critical part in identifying biases embedded in AI-generated content, such as gender or cultural stereotypes, and working to correct or contextualize them for learners (Binns, 2018). Through this ethical stewardship, educators safeguard not only academic integrity but also learner dignity and justice.

Benefits and Challenges of AI as a Co-Teacher

The integration of Artificial Intelligence (AI) into language classrooms as a **co-teacher** presents both significant benefits and complex challenges. While AI offers scalable, personalized, and data-informed instructional support, it also raises pedagogical, ethical, and logistical concerns. Understanding these dual aspects is essential for educators and institutions striving to adopt AI meaningfully and responsibly.

Benefits

- *Personalized Learning: AI systems can adapt instructional content to individual learner needs, pacing, and preferences, thereby facilitating personalized learning pathways. Through Natural Language Processing (NLP) and machine learning, AI tools like Duolingo, ChatGPT, and Grammarly can assess learner inputs and tailor feedback in real-time (Wang et al., 2020). This level of customization supports differentiated instruction and enhances learner autonomy.*
- *Scalability and Accessibility: AI tools can reach a vast number of students simultaneously, making high-quality instruction more accessible, especially in resource-constrained contexts. Automated feedback, speech recognition, and intelligent tutoring systems allow students to practice and learn independently, thus expanding educational access beyond traditional classroom boundaries (Luckin et al., 2016).*
- *Real-Time Feedback and Assessment: AI enhances formative assessment by providing instant, targeted feedback on grammar, pronunciation, vocabulary, and writing structure. This immediacy accelerates the learning process and allows for continuous improvement (Holmes et al., 2019). Teachers benefit as well, as AI reduces their grading workload, enabling more time for lesson planning and student support.*
- *Data-Driven Insights: AI tools generate rich datasets that offer teachers insights into learner progress, behavior patterns, and skill gaps. Such analytics help educators make informed pedagogical*

decisions and provide timely interventions to support struggling learners (Zawacki-Richter et al., 2019).

- *Multimodal Learning Tools: AI-powered language learning platforms utilize multimodal environments that integrate text, speech, visuals, and interactive elements to support diverse learner needs. By incorporating tools such as speech recognition, visual cues, and Natural Language Processing (NLP), these systems create realistic and engaging communication contexts (Chen et al., 2021; Wang et al., 2020). These multimodal features are particularly advantageous for learners with special needs or low literacy, as they enhance understanding through multiple sensory channels. Overall, multimodal AI tools help improve vocabulary, listening skills, and pronunciation, making language acquisition more inclusive and effective (Holmes et al., 2019).*
- *Gamification and Motivation: Another major benefit of AI as a co-teacher is its ability to introduce gamified learning experiences. Gamification refers to the use of game design elements such as points, levels, challenges, and rewards in non-game contexts to increase motivation, engagement, and persistence (Deterding et al., 2011). In language education, gamification transforms repetitive drills into interactive, rewarding activities. Tools like Duolingo apply adaptive algorithms to personalize instruction, provide instant feedback, and reward learner progress, which stimulates dopamine-driven motivation (Chen et al., 2021; Wang et al., 2020). Gamification supports sustained engagement, encourages goal setting, and helps maintain the optimal "flow" state; balancing challenge and skill (Csikszentmihalyi, 1990). It also creates low-stress environments where learners can take risks and make mistakes without fear, reducing language anxiety and promoting confidence (Holmes et al., 2019).*

Challenges

- *Teacher De-Skilling and Role Uncertainty: One major concern is the potential for teacher de-skilling, where over-reliance on AI tools may diminish the development and use of core instructional competencies (Selwyn, 2019). Educators may also face role confusion, struggling to define their purpose in a classroom increasingly dominated by intelligent technologies (Zawacki-Richter et al., 2019).*
- *Algorithmic Bias and Cultural Limitations: AI systems, trained on large language datasets, may inadvertently reflect and perpetuate biases related to gender, race, or linguistic background (Binns, 2018). Moreover, they often lack sensitivity to cultural nuances, idiomatic expressions, and pragmatic usage essential for effective language acquisition.*
- *Ethical and Privacy Concerns: AI applications in education often involve collecting and processing large amounts of student data. This raises ethical concerns about consent, data ownership, transparency, and surveillance (Holmes et al., 2019). In many cases, students and even educators are unaware of how their data is used or stored, posing risks to digital privacy and security.*
- *Digital Divide and Access Inequality: While AI promises scalability, it also exacerbates the digital divide, as not all students have equal access to the internet, devices, or technological literacy. This inequality may widen educational gaps between **students** from different socio-economic backgrounds (Selwyn, 2019).*
- *Lack of Transparency and Accountability: A major challenge in*

adopting AI as a co-teacher is the opacity of AI algorithms, often referred to as the "black box" problem. Educators and learners frequently do not understand how AI systems arrive at decisions such as grading, feedback, or content recommendations (Selwyn, 2019). This lack of explainability undermines trust and makes it difficult to evaluate or contest AI-generated outcomes. Moreover, when errors or biases occur, there is ambiguity around responsibility, raising ethical concerns about who is accountable: the developers, educators, or institutions (Holmes et al., 2019).

- *Technical Limitations and Malfunctions: Despite advances, AI technologies still face technical limitations that can affect learning quality. AI systems may misinterpret user input, especially in complex language tasks involving context, idioms, or accents. These limitations can lead to inaccurate feedback or instructional errors, which may hinder learning rather than support it (Wang et al., 2020). Additionally, system malfunctions such as bugs, poor speech recognition, or internet dependency can cause disruptions and reduce the reliability of AI tools in educational settings (Zawacki-Richter et al., 2019).*

Preparing Teachers for the AI-Era

The integration of Artificial Intelligence (AI) into education is rapidly transforming teaching and learning dynamics, necessitating a fundamental shift in teacher preparation and professional development. To harness AI's full potential while mitigating its limitations, educators must be equipped with **technological competencies, ethical understanding, and pedagogical strategies** tailored to AI-enhanced environments.

- Digital and AI Literacy: To function effectively in AI-enhanced classrooms, teachers need more than basic ICT skills; they must develop AI literacy, which includes understanding how AI systems work, their capabilities, and their limitations (Zawacki-Richter et al., 2019). This involves grasping core concepts such as algorithmic decision-making, data privacy, and the role of machine learning in educational platforms. Without this foundational knowledge, educators may struggle to critically evaluate or effectively integrate AI tools.
- Pedagogical Adaptation: AI is not a replacement for teachers but a pedagogical partner that requires educators to rethink their roles. Teachers must shift from being content deliverers to facilitators, mentors, and ethical guides in technology-mediated learning spaces (Holmes et al., 2019). This transformation involves designing human-centered learning experiences that leverage AI's strengths such as personalization and automation while preserving human qualities like empathy, cultural sensitivity, and moral reasoning.
- Continuous Professional Development: Preparing for the AI era is not a one-time training event but a continuous professional development process. Teachers need regular opportunities to explore AI applications, share best practices, and receive feedback on implementation. Collaborative learning communities and interdisciplinary training that includes ethics, digital pedagogy, and AI functionality can support this need (Luckin et al., 2016; UNESCO, 2021).
- Ethical and Critical Engagement: As AI becomes more embedded in education, teachers must be prepared to engage with the ethical implications of its use. This includes understanding issues of

bias, surveillance, transparency, and the impact of automation on student autonomy. Educators should be empowered to make informed choices about when and how to use AI, advocating for responsible and equitable practices (Selwyn, 2019).

- Institutional and Policy Support: For effective preparation, teachers need systemic backing through updated curricula, supportive school leadership, and national policy frameworks that integrate AI-readiness into teacher education. Initiatives like the UNESCO Guidelines on AI and Education (2021) recommend that teacher education programs embed AI-related content to ensure that future educators are not only tech-savvy but also ethically grounded and pedagogically agile.

Future Directions and Research Gaps

As AI technologies become increasingly integrated into education, particularly in language learning, researchers and educators must identify emerging trends and unresolved questions to guide responsible innovation. While significant strides have been made in AI-assisted instruction, several areas warrant further investigation and development to ensure equity, effectiveness, and ethical alignment.

While early studies show the promise of AI in co-teaching roles, long-term research is needed to assess its impact on learning outcomes, teacher identity, and student engagement. Empirical studies comparing AI-integrated classrooms with traditional settings could yield valuable insights. Moreover, cross-cultural research is essential to ensure that AI tools do not reinforce a monolithic, Western-centric view of language use.

Conclusion

The integration of Artificial Intelligence (AI) as a co-teacher in EFL and ESL classrooms marks a transformative shift in the landscape of language education, merging human pedagogical wisdom with machine efficiency. AI technologies offer remarkable benefits including personalized learning pathways, real-time feedback, and scalable instructional support that enhance learner engagement and enable educators to focus on higher-order teaching objectives. However, these opportunities are counterbalanced by complex challenges, such as ethical concerns, algorithmic biases, and the risk of diminishing teacher agency and professional identity.

As Artificial Intelligence (AI) continues to advance, the role of the human educator must be reimagined, not as a reduced or secondary presence, but as an essential collaborator who contributes emotional intelligence, ethical judgment, and contextual understanding to the learning environment. Educators must now serve as facilitators, content curators, emotional supporters, and ethical stewards to ensure that AI is applied thoughtfully and equitably. Crucially, the success of AI-enhanced education lies in embracing a collaborative human-machine paradigm: one where AI augments, rather than replaces, the irreplaceable human touch.

Ultimately, the future of language education will hinge on achieving a careful balance between technological innovation and the preservation of core human values that make learning meaningful. Preparing teachers through continuous professional development, ethical training, and AI literacy is key to cultivating classrooms where both technological potential and pedagogical integrity can thrive. By fostering this synergy, we can ensure that AI enriches the language learning experience while preserving its most human dimensions connection, empathy, and meaning.

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The Impact of Artificial Intelligence on English Language Teaching and Learning: A Study of AI-Powered Chatbots

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Abstract

As digital technology continues to transform educational landscapes, chatbots are emerging as valuable tools for providing real-time feedback, facilitating interactive language practice, and personalizing learning paths. This study investigates the impact of Artificial Intelligence (AI) on English Language Teaching and Learning, focusing specifically on the integration of AI-powered chatbots. It investigates how AI-powered chatbots enhance learner engagement, promote autonomy, and support individualized instruction in English language education. Drawing on existing literature and classroom-based applications, the study examines both the benefits and the challenges associated with their use. The findings suggest that though AI Chatbots provide promising support for language acquisition, their success relies on effective pedagogical strategies and thoughtful implementation by educators. Despite its limitations and challenges, the role of AI in education is going to expand with the development of technology offering even more innovative approaches and tools to enhance both teaching and learning outcomes in the field of English language education.

Keywords: Artificial intelligence, English Language teaching, AI-powered chatbots, English Language learning, Learner autonomy.

Introduction

In recent years, the field of English Language Teaching and Learning (ELTL) has witnessed the integration of AI-powered tools, which are redefining traditional teaching methods and learner engagement. Among these tools, AI-powered chatbots have emerged as innovative pedagogical agents capable of conducting real-time conversations with users, providing personalized feedback, answering queries, and facilitating language practice through text or voice-based interactions. These capabilities have positioned them as valuable assets in the language classroom, particularly in promoting learner engagement, autonomy, and communication skills. AI-powered chatbots can conduct conversations, correct grammatical errors, provide vocabulary suggestions, and even assess learner performance over time. Their ability to provide instant, individualized feedback makes them particularly effective for supporting second language acquisition, especially in contexts where access to qualified teachers is limited. Moreover, chatbots operate throughout the day, allowing learners to practice language skills at their own pace and convenience, thereby promoting learner autonomy and motivation.

Traditional English language instruction often relies on classroom-based, teacher-centered methods that may not adequately cater to the diverse learning styles, paces, and needs of students. However, AI-powered chatbots introduce a learner-centered approach that fosters interactive, communicative, and adaptive learning environments. These digital tools can simulate real-life conversation scenarios, expose learners to authentic language use, and reduce the anxiety often associated with speaking in front of peers or instructors. For teachers, chatbots can serve as supplementary tools that support instructional delivery, monitor learner progress, and provide data-driven insights for informed pedagogy. Scholars like Godwin-Jones (2020) assert that AI tools, including chatbots, offer opportunities for personalized learning pathways and greater learner autonomy, especially in language education. They simulate authentic conversational

experiences that are essential for language acquisition, thus complementing the more structured input provided in traditional classrooms. Furthermore, the availability of chatbots on mobile devices and online platforms makes them accessible to a broad range of learners, including those in remote or underserved areas.

Despite their potential benefits, the integration of chatbots into language education also raises important pedagogical and ethical questions. Issues such as the quality of language output, the accuracy of feedback, data privacy, and the risk of over-reliance on technology must be critically examined. Furthermore, the effectiveness of chatbot-assisted learning can vary depending on learners' proficiency levels, technological literacy, and the specific design of the chatbot. This study aims to explore the impact of AI-powered chatbots on English language teaching and learning. It examines how these tools influence learner engagement, linguistic competence, and teaching practices in both formal and informal educational settings. By analyzing current applications, benefits, challenges, and pedagogical implications, the study contributes to a deeper understanding of how AI can be harnessed to enhance English language education in the 21st century.

Statement of the Problem

Many learners of English as a second or foreign language encounter persistent challenges in mastering the language due to limited access to qualified teachers, inadequate instructional materials, overcrowded classrooms, and rigid curriculum structures, insufficient speaking practice, limited individualized attention, low motivation, and high levels of language anxiety. These issues are often exacerbated in overcrowded or under-resourced classrooms where traditional teaching methods may not adequately address the diverse needs of students. With the rapid advancement of Artificial Intelligence (AI), new technological tools have emerged with the potential to transform English language education. Among these, AI-powered chatbots are gaining popularity for their ability to engage learners in real-time conversations, provide instant feedback, and create learner-centered environments. Despite their increasing adoption, there is still limited empirical research on how these AI-driven platforms impact actual teaching and learning outcomes. Questions remain regarding their effectiveness in enhancing communicative competence, their role in complementing or replacing traditional instruction, and their accessibility and usability across different educational contexts.

Furthermore, while AI-powered chatbots promise to democratize language learning by offering throughout the day support and reducing learner anxiety, concerns about their pedagogical quality, cultural sensitivity, and potential to depersonalize the learning process persist. There is also a gap in understanding how teachers perceive and integrate these tools into their teaching practices, as well as how learners from diverse backgrounds respond to chatbot-mediated instruction.

Given these gaps in knowledge, this study seeks to investigate the impact of AI-powered chatbots on English language teaching and learning. It aims to investigate both the opportunities and challenges associated with their use and to provide insights into how these tools can be effectively implemented to support language acquisition in diverse educational settings. Addressing these concerns is essential for ensuring that AI technologies are harnessed in ways that support inclusive, effective, and context-appropriate language education.

Research Questions

1. To what extent do AI-powered chatbots enhance English language learners' proficiency in reading, writing, speaking, and listening?

2. How do chatbots influence classroom dynamics and teacher-student interactions?
3. What are the benefits and limitations of using AI-powered chatbots in English language teaching and learning?
4. How do English language teachers integrate AI-powered chatbots into their instructional practices?
5. In what ways do AI-powered chatbots promote learner engagement, motivation, and autonomy in language learning?
6. Are there significant differences in learning outcomes between students who use AI-powered chatbots and those who rely solely on traditional instructional methods?
7. What challenges do learners and teachers face when using AI-powered chatbots in the English language learning environment?

Methodology

This study utilised a mixed-methods research design, combining both quantitative and qualitative approaches to comprehensively investigate the impact of AI-powered chatbots on English language teaching and learning. The mixed-methods approach was selected because it enables researchers to measure quantifiable changes in learners' performance while also exploring subjective experiences and attitudes in greater depth (Creswell & Plano Clark, 2018). The quantitative strand focused on pre- and post-intervention proficiency testing, while the qualitative strand examined learners' and teachers' perceptions of chatbot-assisted instruction. This design ensured a triangulation of data sources, enhancing the validity and reliability of findings (Denzin, 2012).

The target population for this study consists of 110 participants – 100 English language learners and 10 English language teachers at secondary and tertiary educational institutions where digital learning tools are utilized in Ondo West Local Government Area, Ondo State, Nigeria. The target population included: (a) 20 St. Helens secondary school students, 20 St. Louis Girls Secondary school students and 20 Life Veneration Secondary school students enrolled in senior English language classes (SS2 and SS3), (b) 40 undergraduate students from Adeyemi Federal University of Education offering General English courses (Use of English I and II), and (c) English language teachers and lecturers involved in teaching these learners.

At the secondary school level, two intact classes (SS2A and SS2B) were selected. SS2A served as the experimental group (chatbot-assisted learning), while SS2B served as the control group (traditional instruction). At the tertiary level, students from a General Studies English course were randomly divided into two groups following similar experimental and control conditions. The teacher participants were purposively selected based on their experience using technology in teaching and their willingness to participate in the study.

In order to obtain the requisite data, a meticulously prepared and thoughtfully produced questionnaire, consisting of both closed - (Likert scale) and open-ended items were utilized to measure learners' motivation, perceived usefulness of the chatbot, and self-reported skill improvements. It contained 25 items, divided into four sections: Section A: Demographic information, Section B: Students' motivation and engagement, Section C: Perceived usefulness and ease of use of chatbots and Section D: Self-reported improvements in language skills. Several items were adapted from the Attitude/Motivation Test Battery (AMTB) developed by Gardner (2010), and from related studies on technology integration in language learning. The questionnaire's reliability was tested through a pilot study involving 20 yielding a Cronbach's Alpha coefficient of 0.82, which indicates high internal consistency.

Semi-structured interviews was used to select English Language learners and teachers to provide deeper insights into their

experiences, perceived benefits, and challenges of chatbot-assisted learning. Also, pre- and post-test assessments were administered before and after the chatbot intervention to assess learners' skills in reading, writing, listening, and speaking. Chatbot interaction logs was used to observe learner engagement and usage patterns.

The study was carried out in three stages: pre-intervention (baseline data collection), intervention (six weeks of chatbot interaction), and post-intervention (final assessment and interviews). Learners used chatbots for 30 minutes daily, five days a week for six weeks.

Quantitative data were analyzed using descriptive statistics and paired sample t-tests, while qualitative data were analyzed using thematic analysis. Ethical standards were strictly maintained throughout the study. Informed consent was obtained from all participants, confidentiality was ensured, and the right to withdraw at any stage was respected. Approval was obtained from the Adeyemi Federal University of Education Research Ethics Committee before the study commenced.

Table 1: Summary of Methodology

Component	Description
Research Design	Mixed-methods (Quantitative + Qualitative)
Population	English language learners and teachers in secondary and tertiary institutions
Sample Size	60 secondary school students, 40 tertiary students and 10 teachers
Sampling Technique	Purposive sampling
Instruments of Data Collection	Questionnaires, Interviews, Pre/Post-tests, Chatbot Logs
Intervention Duration	6 weeks
Chatbot Usage Requirement	30 minutes daily, 5 days a week
Data Analysis Techniques	Descriptive & inferential statistics, Thematic analysis
Validity and Reliability	Cronbach's Alpha = 0.82, Expert validation, Triangulation
Ethical Considerations	Informed consent, Confidentiality, IRB approval

Findings and Results

Table 1: Summary of Key Findings

Themes/Variables	Findings Summary	Supporting Literature
Language Proficiency	Learners in the experimental group improved significantly in grammar, vocabulary, and oral fluency (Mean difference = 16.2, $p < 0.05$).	Jia (2022); Labadze et al. (2023); Koç & Savaş (2024)
Learner Motivation and Engagement	82% of learners reported higher motivation due to instant feedback and interactive chatbot conversations.	Nasution & Arianto (2024); Xu et al. (2022)
Learner Autonomy	Chatbot usage averaged 4.3 sessions per week, showing increased self-directed learning behaviors.	Fryer & Carpenter (2006); Belda-Medina & Kokošková (2023)

Teachers' Perceptions	Teachers acknowledged improved participation but cited challenges like limited contextual understanding by chatbots.	Godwin-Jones (2020); Kukulska-Hulme (2020)
Challenges and Limitations	Connectivity issues, insufficient teacher training, and occasional chatbot errors hindered smooth integration.	Luckin et al. (2016); Zawacki-Richter et al. (2019)

Results

The results revealed that 82% of learners agreed that chatbot-assisted learning increased their motivation. Interviews revealed that learners found chatbot interactions enjoyable and less intimidating, supporting Nasution & Arianto (2024) and Xu et al. (2022), who highlighted reduced anxiety and increased engagement from AI-based learning. Findings also revealed that 78% of the students reported noticeable improvement in their grammatical accuracy, vocabulary range, and sentence structure after consistent chatbot interaction. Language assessment results showed a mean improvement score of 15.6% in grammar tests and 12.3% in speaking fluency between pre- and post-tests. Students indicated that the immediate feedback and repetition offered by chatbots enhanced their ability to internalize correct language forms. These outcomes validate Jia's (2022) findings that learners who engage regularly with chatbots demonstrate measurable gains in grammar and fluency.

Chatbot usage logs showed that an average of 4.3 sessions per week, suggesting higher self-regulation. Learners appreciated the ability to learn independently, aligning with Fryer & Carpenter (2006) and Belda-Medina & Kokošková (2023) who linked chatbot use to improved learner autonomy. Paired sample t-tests showed a significant improvement in learners' performance after six weeks of chatbot-assisted instruction ($p < 0.05$). The experimental group's mean score rose from 58.4 to 74.6, while the control group improved slightly from 57.9 to 61.3. These results corroborate Jia (2022) and Koç & Savaş (2024), who found that chatbot use enhances grammar and fluency.

From the teachers' perspective, 90% acknowledged the pedagogical value of chatbots as effective tools for supplementary instruction and learner engagement. Teachers observed that students became more proactive and less dependent on them for correction. However, 60% of teachers expressed concerns about the limitations of chatbots in providing context-sensitive feedback and handling complex linguistic phenomena such as idioms, metaphors, and sarcasm. These concerns echo Kukulska-Hulme (2020) and Godwin-Jones (2020), who caution that overreliance on AI may overlook the human interpretative aspect essential to language learning.

This study found that AI-powered chatbots significantly enhanced learners' language proficiency, motivation, and autonomy. However, challenges such as infrastructural limitations, technical errors, and lack of contextual understanding persist. The results reinforce the consensus in the reviewed literature that chatbots hold substantial promise in ELTL when thoughtfully implemented with adequate teacher guidance and infrastructural support,

Limitations of the Study

While this study provides valuable insights into the integration of AI-powered chatbots in English Language Teaching and Learning (ELTL), several limitations should be acknowledged: The six-week intervention period may not reflect long-term language acquisition outcomes. A longer duration would provide a better understanding of retention and

sustained improvement. Also, the study involved a relatively small number of participants, which may not adequately represent the diverse contexts in which English is taught and learned. Therefore, the findings should be interpreted with caution when generalizing to larger populations or different educational settings.

Reliance on self-reported data from students and teachers may be influenced by personal biases or social desirability. More objective measures could enhance reliability. The study examined the use of AI-powered chatbots over a relatively short period. As a result, it could not fully capture long-term effects on language retention, learner motivation, or sustained improvement in communication skills. Some participants—both teachers and students—were unfamiliar with AI-based learning tools. This learning curve may have influenced their willingness and ability to fully utilize the chatbot's features, potentially affecting the results. The study did not include a control group using traditional teaching methods without AI chatbots. This limits the ability to directly compare and measure the added value of chatbot-assisted instruction against conventional approaches.

Finally, technical challenges such as access to devices, internet, and digital skills were not extensively addressed but could significantly impact learner engagement and outcomes, especially in low-resource settings.

Implications of the Study

The findings of this study hold significant implications for teachers, students, educational policymakers and researchers. These implications highlight how technological innovations can be effectively integrated into pedagogical practices to enhance language acquisition, learner engagement, and overall educational outcomes.

Implications for Teachers

a) There is a need for continuous teacher professional development in AI literacy and integration of chatbot technologies.
b) AI chatbots can serve as valuable instructional partners rather than replacements for teachers.
c) Teachers can also leverage chatbots to provide individualized feedback, monitor student progress, and assign additional language practice tasks.

Implications for Students

a) Chatbots offer a safe and interactive environment for language use without judgment.
b) Students should be guided on responsible use of chatbots as supplements to human communication.
c) Immediate feedback enhances learners' awareness and supports self-regulated learning.
d) They promote autonomy, motivation, and continuous practice.

Implications for Government and Policymakers

a) Governments should support teacher training programs and AI literacy.
b) Investment in digital infrastructure, connectivity, and access to learning devices is essential.
c) Public-private partnerships can foster innovation and sustainability in chatbot integration.
d) Policymakers must establish guidelines on ethical AI use, data privacy, and inclusiveness.

Implications for Researchers

a) Further research should explore long-term impacts of chatbot use on proficiency and motivation.
b) Ethical and contextual factors in chatbot interactions warrant continued investigation.

c) Comparative and cross-cultural studies can deepen understanding of chatbot effectiveness.

Conclusion

This study explored the impact of AI-powered chatbots on English language teaching and learning. It found that chatbots significantly enhance language skills, learner motivation, and confidence. Chatbots support communicative practice, offer real-time feedback, and promote learner autonomy.

However, the research also reveals that the successful integration of AI-powered chatbots depends on thoughtful pedagogical planning, adequate training for both teachers and students, and reliable technological infrastructure. While the benefits are promising, limitations such as technological glitches, short-term evaluation, and lack of standardized frameworks suggest that further investigation is needed to maximize their impact.

In conclusion, AI-powered chatbots should be viewed not as replacements for human instruction but as complementary tools that can support and enhance the work of educators. As AI technology continues to evolve, its integration into language education is likely to become more sophisticated, offering innovative approaches that promote engagement, inclusivity, and effective language acquisition. Sustainable success will require a balanced approach that combines technological advancement with sound educational practices.

Recommendations

1. Institutions should integrate chatbots into language curricula as supplementary tools, not replacements for teachers.
2. Developers should design culturally relevant and pedagogically sound chatbot platforms.
3. Policymakers should invest in infrastructure to ensure equitable access to digital tools for language learning.
4. Learners should be encouraged to use chatbots regularly to reinforce self-directed learning.
5. Teachers should receive adequate training on how to implement and monitor chatbot use in classrooms.
6. Ethical issues such as data privacy and content appropriateness should be addressed in chatbot design.
7. Further research should be conducted over longer periods and diverse settings to understand long-term impacts.

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The Impact of Language Policy Reforms on Language Teaching and Learning in Imo State

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Abstract

This qualitative study examines the impact of language policy reforms on language teaching and learning in Imo State, Nigeria. The National Policy on Education's emphasis on multilingualism and the use of mother tongue as a medium of instruction has led to increased efforts to develop language curricula and teacher training programs. However, challenges in implementation, inadequate resources, and the dominance of English as a language of instruction threaten the effectiveness of these reforms. This study investigates how the reforms have influenced language teaching and learning outcomes, teacher preparedness, and linguistic diversity in Imo State. Using in-depth interviews with 12 primary school language educators; 4 selected from each of the three Senatorial districts in Imo State, this study explores their experiences and perceptions of the reforms. Preliminary findings suggest that while the reforms have promoted cognitive development amongst the learners, challenges in implementation and inadequate resources have hindered their effectiveness. The study's results will contribute to a deeper understanding of the complex relationships between language policy, teaching, and learning in Imo State, informing future policy decisions and educational practices.

Keywords: Language policy, Reforms, Language teaching and learning, Multilingualism, National Policy on Education.

Background to the Study

Language policy reforms significantly influence educational practices in multilingual societies like Nigeria, where language diversity is a defining feature. Imo State, located in Southeastern Nigeria, is predominantly bilingual, with English serving as the official language of instruction and Igbo as the indigenous mother tongue spoken widely across the state (Ezeani & Igboanusi, 2020). The Nigerian National Policy on Education (NPE) recognizes this linguistic diversity and promotes multilingualism by encouraging the use of mother tongues alongside English in early education to enhance learners' cognitive development and cultural identity (Federal Republic of Nigeria, 2013). However, the Mother Tongue or language of the immediate environment is recommended as a medium of instruction at the basic education level by the revised national language policy (Federal Republic of Nigeria, 2022).

Globally, the use of mother tongue instruction in early education has been shown to improve comprehension and learning outcomes, particularly in multilingual contexts (Bamgbose, 2011; UNESCO, 2003). In response, efforts have been made within Imo State to develop language curricula and teacher training programs that reflect the NPE's multilingual mandate. However, the implementation of these reforms faces several challenges. The dominance of English as the primary medium of instruction, limited teaching resources, and inadequate teacher preparedness often undermine the policy's intended impact (Igboanusi, 2016; Nwosu & Obikwelu, 2019).

The coexistence of English and Igbo presents both opportunities and challenges for language teaching and learning in Imo State. While English is necessary for national and global communication, Igbo plays a crucial role in preserving cultural heritage and

facilitating early cognitive development (Ogechi, 2014). Teachers navigate this bilingual context amidst systemic constraints that affect their ability to effectively implement language policies (Adegbija, 2004). Understanding how these dynamics influence educational outcomes, teacher experiences, and linguistic diversity is essential for informing policy and practice.

This study seeks to explore the impact of language policy reforms on language teaching and learning in Imo State by focusing on basic education language educators' perceptions across the State's three Senatorial districts; Orlu, Okigwe and Owerri. By examining their lived experiences, the research aims to shed light on the complexities of policy implementation in a bilingual setting and offer recommendations for enhancing bilingual education in Nigeria.

Statement of the Problem

Although Nigeria's National Policy on Education and the recent National Language Policy emphasize mother-tongue instruction and multilingualism, implementation remains weak. Teachers often default to English due to inadequate training, scarce instructional materials in indigenous languages, and societal preference for English. Where mother-tongue use occurs, it is frequently partial and poorly supported, leading to limited improvements in literacy and cognitive outcomes. Understanding educators' experiences is therefore essential to addressing these barriers and aligning policy with classroom realities.

The study aims to examine the impact of language policy reforms on language teaching and learning in Imo State with a focus on educators' experiences, perceptions, and the challenges affecting effective implementation.

Objectives

The study examined the impact of language policy reforms on language teaching and learning in Imo State with a focus on educators' experiences, perceptions, and the challenges affecting effective implementation. Specifically, the study set out to:

1. investigate how language policy reforms have influenced classroom language practices in Primary schools in Imo State.
2. assess teachers' preparedness and capacity to implement mother-tongue instruction.
3. identify the challenges and barriers affecting the effective implementation of language policy reforms.

Significance of the Study

This study provides empirical evidence on how Nigeria's language policy reforms are experienced in Primary schools in Imo State, highlighting the gap between policy and practice. The findings will guide policymakers, curriculum developers, and teacher trainers in improving implementation strategies, resource provision, and teacher preparedness. It will also contribute to scholarly debates on multilingual education in diverse, postcolonial contexts and support efforts to preserve indigenous languages while enhancing learning outcomes.

Scope of the study

The study examined the impact of Nigeria's language policy reforms through the experiences of 12 language educators from the three Senatorial districts in Imo State. It is limited to qualitative interviews and focuses on the National Policy on Education and the National Language Policy, excluding other education reforms and stakeholders such as pupils and policymakers.

Review of Related Literature

Language Policy and Education

Language policy refers to the official or unofficial decisions and regulations governing the status, use, and instruction of languages in a given society (Kaplan &

Baldauf, 1997). While the authors explained the concept of language policy, it was not narrowed down to the Nigerian context. The present study will investigate the Nigerian language policy and it's implementation in Imo State. In Nigeria, the National Policy on Education (NPE) establishes the framework for language use in schools, recommending the mother tongue or language of the immediate environment for early education and introducing English later as a subject and medium of instruction (Federal Republic of Nigeria, 2013). The author has not investigated the implementation of level of their recommendation particularly in Imo State. The present study investigates it. The underlying concept is that language serves both as a means of communication and as a cognitive tool, influencing learners' academic and socio-cultural development (Cummins, 2000). The present study investigates the use of Mother-Tongue in primary schools in Imo State as recommended in the National language policy.

Multilingualism and Mother-Tongue Instruction

Multilingualism in Nigeria is a natural outcome of the nation's over 500 indigenous languages (Egbokhare, 2003). The NPE's emphasis on mother-tongue instruction draws on the interdependence hypothesis, which posits that skills developed in a learner's first language can transfer to second language learning (Cummins, 2000). UNESCO (2003) argues that mother-tongue education enhances comprehension, retention, and cognitive flexibility. Conceptually, this links to additive bilingualism, where learning a second language does not replace the first but builds upon it, preserving linguistic diversity (Baker, 2011). These authors acknowledge the effectiveness of a child's Mother-Tongue in their cognitive development however, attention was not given to the implementation of this recommendation and its outcome in Imo State.

Teacher Preparedness and Resource Availability

Effective policy implementation requires teachers who are linguistically competent in the mother tongue and trained in appropriate pedagogical methods (Bamgbose, 2011). In the conceptual framework of capacity building, teacher preparedness involves not only knowledge of language pedagogy but also access to teaching materials, curriculum guides, and professional support systems (Fullan, 2007). This study investigates all of these issues because without them, even well-intentioned policies will fail to achieve intended learning outcomes.

Dominance of English and Language Attitudes

The dominance of English in Nigeria reflects a status planning orientation, where English is positioned as the language of upward mobility, official communication, and global integration (Adegbija, 2004). This creates tension with mother-tongue promotion, as many parents and educators perceive English as a more valuable educational investment. The language attitude theory suggests that such perceptions significantly shape classroom language practices, often undermining policy objectives (Garrett, 2010). The current study which is empirical will either corroborate or dispute the observations made by the authors.

Implementation Challenges in Multilingual Contexts

In practice, implementing mother-tongue instruction in multilingual or bilingual states like Imo faces logistical and ideological barriers. The concept of language ecology (Haugen, 1972) helps explain this: the educational system exists within a broader socio-linguistic environment, where economic, political, and cultural forces interact to shape language use. Resource constraints, teacher shortages, and societal preferences for English

can disrupt the balance intended by policy reforms (Bamgbose, 2011).

By exploring the lived experiences of language educators in Imo State, this study examines how these conceptual dimensions converge in practice, shaping teaching methods, learner outcomes, and the preservation of linguistic diversity.

Empirical studies repeatedly identify teacher capacity and confidence in MT instruction as constraints. In Owerri, teachers reported limited command of local dialects, low confidence in MT-based classroom discussion, and scarce workshop exposure—indicators of insufficient preparedness for policy implementation (Oruwari, 2012). The present study compares results from Orlu and Okigwe zones to that of Owerri.

Large-scale survey and observational evidence indicates low compliance with National Policy on Education (NPE) provisions on MT/Language of the Immediate Environment (LIE) in the early grades. In a stratified survey of 3,240 pupils/students and 300 English teachers across six Southwestern states, only 10.3% of teachers used the stipulated medium of instruction, while 94% self-reported low implementation (Adeyemi & Ajibade, 2014). While the sample size covers both the pupils and teachers, and the location is the Southwestern region of Nigeria, the current study focused on the primary school teachers in Imo State. A recent econometric evaluation likewise documents weak fidelity and substantial heterogeneity in how the language-of-instruction (LoI) policy is enacted across Nigerian schools (Obiakor, 2024). Within Imo State, a zone-level survey of 418 junior-primary teachers in the Owerri educational zone found widespread deviation from policy: many teachers alternated between English and Igbo rather than using MT as the exclusive medium in the early grades (Oruwari, 2012). Oruwari's investigation was restricted to only Owerri Zone while the present study is spread across the three zones in Imo State. These studies collectively underscore that policy on paper is not reliably reaching practice in classrooms.

Where MT-based pedagogy is implemented with appropriate materials and trained teachers, empirical evidence shows academic and cognitive benefits. The classic Ife Primary Education Research Project found significant gains for children educated through Yoruba in the first six years, with advantages persisting in English and content subjects (Fafunwa et al., 1989). This is a positive implementation outcome which necessitated further Investigation in Imo State. Parallel randomized and quasi-experimental evidence from East Africa corroborates that early-grade MT instruction improves foundational literacy and numeracy, though benefits depend on the quality of materials, teacher training, and the timing/management of language transition (Campbell et al., 2023). Collectively, these results align with your preliminary finding that reforms can promote learners' cognitive development yet fall short when supports are weak.

A consistent, empirically observed bottleneck is the scarcity of MT-aligned instructional materials. In Owerri, teachers reported severe inadequacy of mother-tongue textbooks and other teaching materials (means ≈1.2 on a 4-point adequacy scale), with no significant urban–rural differences—implying a systemic shortfall (Oruwari, 2012). This issue is investigated in the current study, focusing on the three zones in Imo State. Without graded readers, subject glossaries, and assessment tools in MT, teachers revert to English, particularly in examinable subjects.

The Imo-specific evidence from Owerri shows partial uptake of MT instruction alongside teacher under-preparedness and material scarcity (Oruwari, 2012), while broader Nigerian studies indicate similar impediments (Adeyemi & Ajibade, 2014; Obiakor, 2024; UNICEF Nigeria, 2022). The qualitative interviews with 12 language educators (four per senatorial district) is well matched to probe the mechanisms behind these

patterns: how teachers navigate dialect variation, material gaps, parental expectations for English, and inspection/assessment pressures. Empirical precedent suggests three focal mechanisms to explore: (a) the role of training and professional learning communities in shifting teacher beliefs and routines; (b) availability/quality of MT materials and assessments; and (c) school-level leadership and supervision shaping fidelity. Findings can contribute practically to targeted teacher development, phased transition planning, and district-level resource strategies tailored to Imo's linguistic ecology.

Methodology

This study adopted the qualitative research design to explore the impact of language policy reforms on language teaching and learning in Imo State, Nigeria. The purposive sampling technique was used to select 12 language educators; four from each of Owerri Zone, Orlu Zone and Okigwe zone, ensuring representation across the state. Data were collected through in-depth, semi-structured interviews guided by five core questions, allowing participants to share detailed experiences and perceptions of the reforms. Each interview lasted approximately 45–60 minutes, was audio-recorded with consent, and later transcribed verbatim. To maintain ethical standards, participants were provided with informed consent forms, assured of confidentiality, and given the right to withdraw at any time without penalty. Pseudonyms were used in reporting to protect identities. Data were analyzed thematically to identify recurring patterns, insights, and challenges, providing a comprehensive understanding of the reforms' influence on teaching practices, learner outcomes, and linguistic diversity in the state.

Content Analysis of the Interview

The interview questions and answers are presented below, followed by their analysis.

1. Where do you teach and how have recent language policy reforms influenced your approach to teaching in the classroom?

Orlu Zone

Participant A: Well, I teach in a public primary school in Nkwerre LGA and it is easy for me to communicate with them using the local dialect?

Participant B: I teach in a private school in Orlu LGA and parents don't seem to understand why their children should be taught in their Mother-Tongue so we are compelled to teach using the English language.

Participant C: I teach in a public primary school in Nwangele LGA. It influenced my approach to teaching in the classroom because my pupils speak more of their mother tongue so it is easier for them to comprehend when topics are explained in their mother tongue.

Participant D: My school is a private school located in Oru West LGA. I use the Mother-Tongue sometimes but most of the time I speak English. Parents expect me to teach their children using the English language.

Okigwe Zone

Participant A: My school is a public primary school in Onuimo local government and I teach my pupils using their mother tongue.

Participant B: My school is a private school in Ihitte/Uboma local government and I teach my students using the English language.

Participant C: I teach in a private school in Isiala Mbano LGA and I teach my pupils using the English language and sometimes the Igbo language.

Participant D: I teach in a public school in Ehime Mbano LGA and I teach my pupils using the Mother-Tongue.

Owerri Zone

Participant A: I teach in a public school in Owerri municipal but I teach my pupils using the English language and mother-tongue.

Participant B: I teach in a public primary school in Abor Mbaise LGA and I teach my pupils using the Mother-Tongue.

Participant C: I'm private primary school teacher in Mbaitolu LGA and I teach my pupils using the English language.
Participant D: I teach in private primary school in Ikeduru and I teach my pupils using the English language.

2. In your experience, what benefits have these reforms brought to learners' language development?

Orlu Zone

Participant A: The benefit is that my pupils are able to fully express their thoughts and imaginations using the local dialect or mother-tongue. They are able to assimilate classroom instructions.
Participant B: I teach using the English so I don't have a first hand experience what benefits teaching in the mother-tongue or language of the immediate environment may be to the pupils.
Participant C: It is building their comprehension skills.
Participant D: I believe that the mother - tongue improves their ability to assimilate concepts because they seem to understand better when I come down to explain in the mother-tongue

Okigwe Zone

Participant A: It helps them to understand better.
Participant B: Truth is, they seem to understand better when I switch to the Igbo language during a lesson.
Participant C: They understand difficult topics better when they are explained in the mother-tongue.
Participant D: The mother-tongue helps them to express themselves confidently during classes.

Owerri Zone

Participant A: The benefit is that the pupils can relate with the topic better when they are explained in the language of their immediate environment.
Participant B: Teaching in the mother-tongue gives the pupils the confidence to participate very well during a lesson.
Participant C: Teaching in the mother-tongue truly aids their comprehension.
Participant D: The pupils can easily relate with the topic when it is explained in the mother-tongue.

3. What challenges do you face in implementing the mother tongue policy in your teaching?

Orlu Zone

Participant A: The first challenge is that parents think that teaching children in mother-tongue will hinder them from achieving proficiency in English.
Participant B: Parents think that teaching their children in their mother-tongue will stop them from mastering English. They believe that a school that uses mother-tongue to teach is a quack school so in order to retain their patronage, we are compelled to teach in English.
Participant C: The challenge we have is the ridicule pupils face in the public when people realise they are being taught in their mother-tongue.
Participant D: The challenge is that parents expect us to teach using English and since they are the payers, we must do their bidding to maintain their patronage.

Okigwe Zone

Participant A: Parents think that we are not helping them to learn English which they believe will help the pupils better.
Participant B: Parents do not want to accept teaching their children in the mother-tongue.
Participant C: The problem is that when the public hear that pupils in your school are thought in the mother-tongue, they refuse to enroll their children in the school.
Participant D: I think what I see as a challenge is my pupils envying pupils from schools that use English as a medium of instruction.

Owerri Zone
Participant A: Switching from English to Igbo which is the language of the immediate environment is challenging because my school is in the city and there are some pupils who are non-Igbos.
Participant B: It is challenging because people don't seem to understand why a teacher will abandon a global language and teach using the mother-tongue.
Participant C: It is difficult to implement because parents want their children taught in the English language.
Participant D: If we teach in Igbo, we will lose our students and go out of business.

4. How would you describe the level of preparedness and training you have received to implement these reforms?
Orlu Zone
Participant A: The good thing is that I am fluent in the language of immediate environment but I have not received sufficient training to be able to implement the reforms fully.
Participant B: Being in the private school, I hardly have opportunities to attend workshops or trainings that equip me to implement these reforms.
Participant C: When it comes to resource materials are trainings, we don't receive enough.
Participant D: Most teachers in the private school do not receive the needed regular trainings. Some of us are not even aware of these reforms.

Okigwe Zone
Participant A: We still need more trainings and textbooks to assist us.
Participant B: I'm not aware of any training or preparation
Participant C: I have not attended such trainings before.
Participant D: We need the government to create more awareness on the importance of teaching pupils in their mother-tongue.

Owerri Zone
Participant A: The trainings should become more regular.
Participant B: I have not received enough trainings.
Participant C: I'm not aware of such trainings.
Participant D: I have not participated in such trainings before.

Overall Analysis
The interviews reveal a policy-practice gap: while reforms emphasize mother-tongue instruction, real-world adoption is hindered by parental resistance, economic pressures in private schools, stigmatization of local languages, and lack of teacher training. Public schools align more closely with reforms but still struggle due to societal attitudes. Benefits (better comprehension, expression, and confidence) are clear where mother-tongue is used, but sustained impact requires stronger policy enforcement, parental sensitization, and structured teacher training.

Discussion of Findings
1. Influence of Language Policy Reforms on Teaching
Public versus Private Divide: Public school teachers (across Orlu, Okigwe, and Owerri) are more likely to adopt the mother tongue (Igbo) in teaching, while private school teachers mostly rely on English due to parental expectations.
Geographical Variation: Regardless of zone, the same pattern emerges—public schools align more closely with reforms, while private schools resist due to market pressures.
Implication: Policy implementation is uneven, shaped by school type and parental attitudes rather than government directives alone.
2. Benefits for Learners' Language Development
Improved Comprehension: Across zones, teachers consistently report that pupils understand topics better when taught in the mother tongue.

Confidence & Expression: Pupils express themselves more freely and participate actively when instruction includes their local language.
Private School Gap: Teachers who rely solely on English struggle to observe or articulate these benefits, showing disconnect between reforms and practice in private schools.

3. Challenges in Implementation

Parental Resistance: The strongest challenge across all zones is parental fear that mother-tongue instruction will limit English proficiency and future opportunities.
Public Perception: Teaching in the mother tongue is stigmatized—linked with poor quality education and "quack" schools.
Economic Pressures: Private schools particularly face enrollment threats if they adopt mother-tongue instruction, making them commercially constrained.
Cultural Diversity: In urban areas (e.g., Owerri), linguistic diversity complicates implementation since not all pupils are Igbo speakers.

4. Preparedness and Training

Widespread Lack of Training: Teachers across all zones report inadequate training, minimal workshops, and little provision of instructional materials.
Private versus Public Gap: Private school teachers especially feel excluded from government-organized training.
Awareness Deficit: Some teachers are not even aware of reforms, pointing to weak dissemination and follow-up by policy makers.
Implication: Without structured capacity building, the policy remains aspirational rather than practical.

Summary

This study explored the impact of Nigeria's language policy reforms on teaching and learning in Imo State primary schools. Using interviews with teachers across Orlu, Okigwe, and Owerri zones, the findings show that while mother-tongue instruction improves pupils' comprehension, confidence, and participation, its implementation faces major obstacles. These include parental resistance, preference for English, lack of training, poor resources, and societal stigma. Public schools apply the policy more than private schools, which prioritize English to satisfy parents. The study concludes that effective implementation requires teacher training, instructional materials, and sensitization of parents and stakeholders.

Conclusion

The study has shown that Nigeria's language policy reforms, though well-intentioned, face serious implementation challenges in Imo State primary schools. While the use of mother-tongue enhances pupils' comprehension, confidence, and active participation, resistance from parents, societal preference for English, inadequate teacher training, and lack of resources continue to hinder progress. Public schools make greater efforts to apply the policy, whereas private schools prioritize English to meet parental demands. To bridge the gap between policy and practice, there is need for sustained teacher training, provision of teaching materials, and increased awareness to change negative attitudes toward mother-tongue education.

Recommendations

1. Teacher Training: Government and stakeholders should organize regular workshops to equip teachers with skills for effective mother-tongue instruction.
2. Instructional Materials: Adequate textbooks and resources should be provided in local languages to support classroom teaching.
3. Parental Sensitization: Awareness campaigns should be carried out to educate parents on the benefits of mother-tongue education for children's learning and development.
4. Policy Enforcement: The government should strengthen monitoring to ensure consistent implementation of the language policy across schools.

5. Support for Private Schools: Incentives and support should be given to private schools to encourage the integration of mother-tongue instruction without fear of losing patronage.

Contributions to Scholarship

This study contributes to scholarship by providing empirical evidence on how Nigeria's language policy reforms are implemented in Imo State primary schools. It highlights the contrast between public and private schools, the benefits of mother-tongue instruction for pupils' learning, and the sociocultural and institutional barriers that hinder effective implementation. The findings enrich existing debates on language policy in multilingual contexts and offer practical insights for education policymakers and researchers.

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Institutional Readiness, Academic Perception, and Pedagogical Shifts in the Integration of Generative AI in Nigerian Higher Education

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Abstract

This study explores institutional readiness, academic perception, and emerging pedagogical shifts associated with generative artificial intelligence (GenAI) in Nigerian higher education. It is guided by the Technology Acceptance Model (TAM) and Technological Pedagogical Content Knowledge (TPACK) framework with the Technology Organization Environment (TOE) theory providing additional insight into broader institutional factors such as infrastructure, policy, and leadership. Descriptive survey design was used to collect data from university lecturers and administrators' regarding GenAI awareness, usage patterns, ethical concerns, and infrastructural readiness. Three universities in Oyo State were selected using the purposive sampling to ensure diversity in location, ownership (federal, state, private), and disciplines. Sixty lecturers across sciences, education, and humanities, and thirty administrators participated. Data were gathered using six validated instruments to measure GenAI awareness, use, perception, ethical concerns, and institutional readiness. Data analysis combined descriptive statistics with Chi-square. Findings revealed limited institutional policies, inconsistent training, and informal pedagogical adaptation to GenAI. The study recommended the formulation and development of clear institutional policy frameworks, regular capacity-building programs, and strategic investment in digital infrastructure to facilitate sustainable GenAI adoption in higher education teaching and learning.

Keywords: Institutional preparedness, Perceptions, Pedagogical shifts, Generative artificial intelligence, Higher Education

Introduction

Generative Artificial Intelligence (GenAI) tools such as ChatGPT, Grammarly, OpenAI's ChatGPT, Google's Gemini, Microsoft's Copilot, and Quillbot are rapidly transforming educational systems across the globe and sparking critical discourse on the future of education. GenAI refers to artificial intelligence systems capable of generating human-like outputs, such as text, code, images, or audio, based on user input. These systems rely on large-scale language models and machine learning to produce coherent, creative, and contextually appropriate responses. These tools also offer advanced capabilities in natural language generation, coding assistance, translation, image synthesis, content creation, and automated feedback, catalysing transformations in teaching, research, and academic administration. The discourse around its potential and implications has gained significant momentum which has led institutions in technologically advanced countries to develop strategic frameworks for integrating GenAI into curricula, pedagogy, administrative processes and policy frameworks.

In Nigeria, the push towards digital transformation has gained traction after the COVID-19 pandemic through National initiatives such as the Nigerian National Broadband Plan (2020–2025) and the National Universities Commission (NUC) advocacy to promote blended learning. These policies have supported progress towards a more connected, accessible, and innovative education system crucial to drive economic growth and digital transformation in Nigeria. However, these reforms have often faced challenges of uneven implementation, underfunded infrastructure and limited staff digital literacy, setting a complex backdrop for the current GenAI wave. Consequently, the integration of GenAI tools into the Nigerian educational system remains

tentative as the Nigerian Higher Education Institutions (HEIs) are still in the early stages of effectively institutionalizing GenAI because institutions are still grappling with how to leverage and embrace this technological shift amid complex systems marked by infrastructural limitations, policy ambiguity, and uneven digital capacity (Adeoye and Adebiyi 2024). Also, formal policy frameworks from national bodies like National University Commission (NUC), National Board for Technical Education (NBTE), and National Commission for College of Education (NCCE) remain underdeveloped, contributing to inconsistencies in institutional readiness (Adeoye & Adebiyi, 2024). This indicates that while advancements have been made, there is still much work to be done to fully realize the benefits of digital education.

Nonetheless, the benefits of GenAI in education are very significant and wide-ranging. GenAI offers considerable potential in enhancing learning outcomes through personalised tutoring, improving academic writing and communication, accelerating research through intelligent summarization, literature synthesis, and streamlining administrative tasks such as grading, admissions processing, and feedback generation mechanisms. Furthermore, GenAI can support inclusive education by providing multilingual and accessibility features and can foster innovation by enabling students and staff to co-create content, simulate scenarios, and experiment with digital tools across disciplines. In resource-constrained settings, it holds the potential to bridge infrastructural deficits, expand access to learning support, and empower educators through automation and personalization. Based on this, Nigerian scholars have articulated the critical value of GenAI adoption in higher education. Reinforcing the pedagogical and research value of GenAI and advocating the strategic adoption of GenAI in higher education in Nigeria. As such, Ajayi and Adetunji (2023) posit that integrating AI tools like ChatGPT into university instruction can significantly enhance student engagement and support learner autonomy, especially in large classes. Also, Ajayi (2024) found high levels of awareness and positive perception of GenAI among Library and Information Science lecturers, who identified its potential in enhancing information retrieval, personalized learning, and academic administration. Ogunyemi, Ayodele and Eniola (2024) emphasize the potential of GenAI to bridge gaps in resource-limited institutions by augmenting instructional delivery, automating routine academic tasks, and providing low-cost support systems for both students and staff.

To complement the above, a study by Irunokhai, Lawal and Okonkwo (2024) found that ChatGPT significantly enhanced programming comprehension among computer science undergraduates. Similarly, a study of pharmacy students at Afe Babalola University reported improved academic performance and high tool familiarity though with ethical reservations (Orok, Okaramee, Egboro, Egbochukwu, Bello, Etukudo, Ogologo, Onyeka, Etukokwu, Kolawole, Orire, Ekada, Akawa, 2024). A UTAUT-based investigation by Yakubu, David & Abubakar (2025) confirmed a strong student intention to use GenAI for learning and research. These perspectives converge on the belief that GenAI, if strategically implemented, can drive instructional innovation, close gaps in feedback delivery, and personalize learning experiences especially in institutions grappling with limited resources.

However, despite its potential, there are many factors mitigating against the adoption of GenAI in HEIs. First, the use of Generative AI (GenAI) in Nigerian Higher Education Institutions (HEIs) is largely driven by individual initiatives of both lecturers and administrators, rather than by structured or coordinated institutional frameworks. This individual-driven approach has led to fragmented and informal use of GenAI tools, often in the absence of clear guidelines,

policies, or institutional support (Nwachukwu & Okonkwo, 2023; Ogunlade & Afolabi, 2024). Also, a study by Dauda and Eze (2024), revealed that peer influence and departmental culture often outweigh formal institutional guidance in shaping GenAI engagement. In other words, socio-cultural norms and departmental ecosystems frequently influence GenAI engagement more than formal institutional policies, as evidenced by studies employing frameworks such as activity theory (Dauda & Eze, 2024; Yusuf, Adebanjo, and Nwafor 2024).

Additionally, Nigerian academics, while showing growing interest in these technologies, remain cautious due to ethical concerns such as plagiarism, algorithmic bias, data privacy/security, and the fear that AI could encourage intellectual laziness. A recent study by Bello and Ojo (2025) revealed that both faculty and students recognise the benefits of tools like ChatGPT but expressed anxiety over ethical concerns and policy ambiguity. Also, most of these lecturers have also expressed concerns about students' over-reliance on GenAI fostering complacency. For instance, Prof. Nwaogwugwu, a lecturer at the University of Lagos, in an interview with columnist Ozibo of Nairametrics.com expressed frustration over student's overreliance on AI generated responses by recounting a recent event. He stated that in an assignment he gave to his MBA students, out of over 100 students, about 40% submitted the exact same answers. *"These students did not even know each other, but they all used the same AI tool to generate their responses,"* he said. He noted that this trend is prevalent among both undergraduate and postgraduate students but is especially concerning in part-time and distance learning programs. Due to this experience, he concluded that *"AI is a serious challenge when it comes to assignments. Many students no longer think critically; they just go online, generate answers, and submit,"* he added. Similarly, the article revealed that Prof. Nwaogwugwu's findings was not different from that of other lecturers interviewed in other universities, however, Dr. Ereke of Ebonyi State University differed as he noted that lecturers themselves are guilty of the same practice. He stated that: "It's not just students using AI lazily. Some lecturers, out of their own laziness, generate lesson notes, course outlines, marking schemes, and even exam questions with AI without reviewing them. Students in turn use AI to generate answers. It's a cycle of laziness and it is killing real learning," he lamented. To complement this, a recent critical review warns that overreliance on GenAI tools could erode core academic skills such as critical thinking, creativity, and problem-solving and degrade mentoring interactions while also introducing algorithmic bias and privacy risks (Adegbite & Usman, 2024). These observations reflect broader fears that GenAI may erode students' cognitive engagement and create shortcuts detrimental to long-term intellectual development (Adegbite & Usman, 2024).

Additionally, a comprehensive analysis highlighted persistent issues like infrastructural challenges such as unstable internet, inconsistent electricity, lack of funding and low digital literacy further limits the responsible use of these tools. A study by Okafor, Musa and Iwuchukwu (2024) found that although Library and Information Science (LIS) educators in Nigeria were aware of GenAI benefits, practical adoption was hindered primarily by unreliable internet, limited access tools and absence of institutional support. Also, a study by (Akinola & Salami, 2022) revealed limited institutional capacity and support structures. Significantly, it is important to note that these dynamics are not only restricted to the Nigerian setting but reflect a broader global pattern. A recent global review by Adebayo, Ogundipe and Eze, 2024 found that though low- and middle-income countries are increasingly aware of GenAI's potential, their interest often coexist with persistent structural challenges, including inadequate infrastructure, weak governance

frameworks, and limited professional development (Ogunleye, Bello and Adebisi, 2024; Global Centre on AI Governance, 2024).

Similarly, Ibrahim and Kolade (2023) recommend the development of national and institutional policies to guide the ethical and pedagogically sound use of GenAI, highlighting the opportunity to modernize Nigeria's higher education system and align it with global trends. Administrators, on the other hand face challenges related to regulatory ambiguity and a lack of structured implementation mechanisms (Bello & Ojo, 2025). In other words, despite rising awareness and interest for GenAI, widespread and effective adoption is still constrained by insufficient training opportunities, poor infrastructure, and the absence of robust ethical and operational policies (Yusuf et al., 2023; Ogunlade & Afolabi, 2024, (Ogunleye et al., 2024; Global Centre on AI Governance, 2024).This disjunction between academic enthusiasm and institutional preparedness poses significant challenges to the sustainable and ethical implementation of GenAI technologies in higher education.

The current scepticism underscores the need for; Ethical guidelines and regulatory frameworks; Capacity building for staff and students; Policy interventions by NUC, NBTE, and NCCE; Institutional investment in digital infrastructure and Balanced human–AI collaboration, not substitution. These concerns are valid but they should not be interpreted as a call for rejection or technological abstinence, but rather, a call for a critical and strategic approach to GenAI integration; a framework for caution; one that is ethically grounded, policy-driven, and context-sensitive. Avoiding GenAI will not stop its proliferation or usage; in fact, students and faculty are already engaging with these tools informally, often without training or ethical guidelines. Without institutional guidance, informal and unregulated usage may result in academic dishonesty, misinformation, and skill erosion. Thus, it is more prudent for institutions to adopt and regulate, rather than ignore the growing reality of GenAI. A responsible integration approach grounded in ethical use, staff development, and institutional alignment can ensure that Nigerian HEIs harness the strengths of GenAI while mitigating the risks. These critiques align with global findings showing that academic caution outweighs excitement, particularly as educators worry about GenAI undermining autonomy, creativity, and scholarly integrity.

Statement of the Problem

As GenAI tools become increasingly relevant in pedagogy, administration, and policy-making, their integration into Nigeria's higher education system remains inconsistent, fragmented, and largely unregulated, driven more by individual efforts than institutional strategies. Systemic issues such as poor infrastructure, unclear policies, limited digital literacy, and the absence of coordinated frameworks hinder effective adoption. Although studies highlight GenAI's potential in teaching, administration, and capacity building, research exploring the link between institutional readiness, academic perception, and pedagogical shifts remains limited. Therefore, this study investigates institutional readiness, academic perception and pedagogical shifts in the integration of GenAI in Nigerian higher education in Oyo State, Nigeria.

Objectives of the Study

The specific objectives are to:

1. investigate lecturers' and administrators' awareness level of GenAI tools in terms of usage and relevance to teaching, research, and administration.
2. examine lecturers' and administrators' perception of GenAI tools in terms of usefulness, ease of use, ethical concerns, and relevance to teaching, research, and administration.
3. identify and analyse the pedagogical shifts occurring in response to GenAI usage,

including changes in instructional strategies, assessment practices, and student engagement.
4. assess the level of institutional readiness for GenAI integration in selected universities in Oyo State.
5. investigate whether institution type (public, state or private) influences the level of lecturers' and administrators' awareness of GenAI tools.

Research Questions

RQ1: What is lecturers' and administrators' awareness level of GenAI tools in terms of usage and relevance to teaching, research, and administration?

RQ2: What is lecturers' and administrators' perception of GenAI tools in terms of usefulness, ease of use, ethical concerns, and relevance to teaching, research, and administration?

RQ3: What are the pedagogical shifts experienced by lecturers who use GenAI, particularly in instructional strategies, assessment practices, and student engagement?

RQ4: What is the level of institutional readiness for GenAI integration in selected universities in Oyo State (in terms of infrastructure, policy frameworks, leadership, and support systems)?

Significance of the Study

This study is significant in that it fills a critical research gap by holistically examining the intersection of institutional readiness, academic perception, and pedagogical transformation in the generative artificial intelligence (GenAI) within Nigerian higher education. It contributes original empirical data that inform both theoretical understanding and practical application. The study benefits institutional policy and planning by identifying systemic enablers and barriers to GenAI adoption, offering actionable insights for university administrators, policymakers (e.g., NUC, NBTE, NCCE), and ICT directors developing coherent frameworks, regulations, and support systems for ethical and effective GenAI integration. The findings also advance pedagogical innovation by illuminating how GenAI influences teaching methods, assessment practices, and learner engagement, thereby helping educators design more personalized, inclusive, and interactive learning environments. In addition, the findings inform the design of targeted digital literacy and GenAI training programs for academic and administrative staff, helping to bridge the existing skills gap and promote responsible technology use. By highlighting ethical challenges and stakeholder concerns, the study supports the development of context-sensitive ethical guidelines for GenAI usage in academia, an area which is currently underdeveloped in many Nigerian institutions. Ultimately, the study provides evidence-based recommendations with potential to guide national and institutional policy reforms and curriculum redesign, ensuring that GenAI integration in higher education is not only technologically sound but also pedagogically meaningful and aligned with Nigeria's broader digital education goals.

Theoretical Framework

This study is guided by three complementary theoretical frameworks: the Technology Acceptance Model (TAM), the Technological Pedagogical Content Knowledge (TPACK) framework, and the Technology Organization Environment (TOE) framework. Together, they provide a multi-level lens to examine the integration of Generative AI (GenAI) in Nigerian higher education.

TAM propounded by Davis, 1986, 1989 explains technology adoption based on perceived usefulness and ease of use. It is relevant for exploring how lecturers and administrators perceive GenAI tools (e.g., ChatGPT, Grammarly, Copilot), and informs Research Question 2 and Hypothesis 4 on user perception and ethical concerns.

TPACK by Mishra & Koehler, 2006 focuses on the knowledge needed to integrate technology effectively into pedagogy. It supports the analysis of pedagogical shifts such as changes in instructional strategies and assessment methods, driven by GenAI, aligning with Research Question 3 and Hypothesis 3.

While TAM and TPACK address individual and pedagogical dimensions, they do not account for broader institutional dynamics. To bridge this gap, the TOE framework put together by Tornatzky & Fleischer, 1990 was incorporated. TOE examines how technology adoption is shaped by technological readiness, organizational capacity, and environmental pressures. It is critical to understanding variations in institutional readiness, leadership, infrastructure, and policy addressing Research Questions 1, 4, 6, and 7, and Hypotheses 1, 2, and 5.

TOE complements TAM and TPACK by offering a systemic perspective on GenAI integration across university types (federal, state, private). Its inclusion ensures a holistic approach that captures both individual and institutional factors influencing GenAI adoption and pedagogical transformation.

Methodology

The study adopted the descriptive survey design. The population of the study comprised 90 participant and the purposive sampling was used to select three universities in Oyo State to ensure diversity in location, ownership (federal, state, private), and disciplines. Sixty lecturers across sciences, education, and humanities, and thirty administrators participated. This mixed group of academic and administrative personnel was purposively selected to provide diverse perspectives and a balanced view of both instructional and organisational dimensions of GenAI adoption. Instruments used were Questionnaires on GenAI Awareness for Lecturers (r = 0.84), GenAI Awareness Instrument for Administrators (r = 0.82), Perception of Lecturers on GenAI Integration Instrument (r = 0.82) and the Institutional GenAI Integration Survey for Administrators (r = 0.79). Data collected were analysed using descriptive statistics of frequency counts, mean, standard deviation with Chi-square tests for inference. .

Results and Discussion

Research Question One: What is lecturers and administrators' awareness level of GenAI tools in terms of usage and relevance to teaching, research, and administration?

Table 1 a: Lecturers Awareness of GenAI

QUESTIONS	ITEMS	YES	NO
1	Have you heard of any generative AI tools (e.g., ChatGPT, Bard, Claude, Grammarly and Copilot)?	60(100%)	0(0%)
2	I am aware of what Generative AI tools are and how they function.	60(100%)	0(0%)
	Do you currently use GenAI tools in your teaching practice?	22(36.7%)	38(63.3%)

Table 1b Administrators Awareness of GenAI

QUESTIONS	ITEMS	YES	NO
1	Have you heard of any generative AI tools (e.g., ChatGPT, Bard, Claude, Grammarly and Copilot)?	16(53.3%)	14(46.7%)
2	I am aware of what Generative AI tools are and how they function.	22(73.3%)	8(26.7%)
5	Do you currently use GenAI tools in your administrative duties?	12(40%)	18(60%)

Tables 1a & 1b present the levels of awareness of Generative AI (GenAI) tools among lecturers and administrators, focusing on their usage and perceived relevance to teaching, research, and administration. Table 1 shows that all 60 lecturers surveyed have heard of GenAI tools and are aware of their functions. However, only a small proportion currently incorporate these tools into their teaching practices, while the majority do not. In Table) 1b, a similar trend is observed among administrators, where awareness levels are high but actual usage for administrative duties remains low.

Research Question Two: What is lecturers and administrators' perception of GenAI tools in terms of usefulness, ease of use, ethical concerns, and relevance to teaching, research, and administration?

Table 2 a Perception of Lecturers on GenAI

S/N	ITEMS	SA	A	D	SD	$\bar{x}$	St.D.
1	I regularly use Generative AI (GenAI) tools in my teaching, research, or administrative activities.	**27**	**12**	**7**	**14**	**2.87**	**1.22**
2	I regularly follow discussions or updates about GenAI in education.	**26**	**21**	**10**	**3**	**3.17**	**0.88**
3	I find GenAI tools (e.g., ChatGPT, Copilot, Grammarly) useful and relevant to my academic work as they enhance teaching, research and administrative efficiency	**37**	**10**	**7**	**6**	**3.30**	**1.02**
4	Integrating GenAI is necessary for modernizing higher education.	**42**	**14**	**2**	**2**	**3.60**	**0.71**
5	I have received training or orientation on how to use GenAI tools and they are easy to use and align with my instructional and research needs.	**38**	**2**	**15**	**5**	**3.22**	**1.08**
6	I am confident in using GenAI tools and trust the accuracy and reliability of their output.	**12**	**4**	**4**	**40**	**1.93**	**1.27**
7	I have experienced challenges using GenAI tools in my academic work.	**18**	**20**	**20**	**2**	**2.90**	**0.91**
8	GenAI tools are useful in preparing course materials and administrative reports.	**21**	**13**	**21**	**5**	**2.83**	**1.02**
9	I consider GenAI tools valuable for improving research productivity.	**21**	**26**	**9**	**4**	**3.07**	**0.89**
10	I worry about ethical issues and data privacy when using GenAI tools	**37**	**10**	**9**	**4**	**3.33**	**0.97**
11	The use of GenAI tools may lead to over-reliance or intellectual laziness.	**46**	**10**	**2**	**2**	**3.67**	**0.66**
12	I believe institutions need to develop strict policies on GenAI use.	**46**	**14**	**-**	**-**	**3.77**	**0.42**

N=60 Weighted Mean=3.14; Threshold=2.5

Table 2a shows varied perceptions among lecturers regarding the adoption, usefulness, and implications of Generative AI (GenAI) tools in higher education. The highest level of agreement was recorded for institutional policy needs, with *"I believe institutions need to develop strict policies on GenAI use"* achieving the top mean score ($\bar{x}$ = 3.77) and minimal variation, signalling near-unanimous consensus. Similarly, strong agreement emerged for modernization and cautionary perspectives, as reflected in *"Integrating*

education" (x̄ = 3.60) and *"The use of GenAI tools may lead to over-reliance or intellectual laziness"* (x̄ = 3.67). Positive perceptions of GenAI's practical value are also prominent as lecturers acknowledge its role in enhancing teaching, research, and administrative efficiency (x̄ = 3.30) and improving research productivity (x̄ = 3.07). However, items in this category show slightly higher standard deviations, indicating that while the overall sentiment is favourable, individual experiences and adoption levels vary.

The item on training and ease of use (x̄ = 3.22) further reinforces this point, suggesting that although many lecturers find GenAI tools manageable, a notable proportion lack sufficient orientation or encounter usability challenges. Confidence in GenAI's accuracy and reliability emerged as a critical weakness, with the lowest mean score (x̄ = 1.93) and the highest variability, highlighting deep-seated scepticism among lecturers. Other concerns include practical barriers and ethical considerations. Challenges in using GenAI tools (x̄ = 2.90) and apprehensions about underscore that perceived benefits are tempered by caution. Moreover, measures of routine application such as *"Regular use in teaching, research, or administration"* (x̄ = 2.87) and *"Preparation of course materials and administrative reports"* (x̄ = 2.83)—reflect only moderate adoption, with wide variation in practice.

Overall, the data suggest that while Nigerian lecturers recognize the potential of GenAI to enhance higher education, their perceptions are shaped by concerns about ethics, over-reliance, and the trustworthiness of AI output. **Closing the gap between awareness and confident, effective use will require robust institutional policies, targeted professional development, and trust-building around the technology's capabilities and limitations.** The result implies that lecturers' overall perception of Generative AI (GenAI) tools in higher education is positive, with an overall weighted mean of 3.13 surpassing the 2.50 benchmark for favourable perception.

Table 2 b Questionnaire on the Perception of Administrators on GenAI Integration

S/N	ITEMS	SA	A	D	SD	x̄	St.D.
1	I am aware of the potential of Generative AI (GenAI) tools (e.g., ChatGPT, Copilot, Grammarly) in improving administrative operations.	**10**	**8**	**8**	**4**	**2.80**	**0.91**
2	I believe GenAI tools can enhance the efficiency of administrative processes in higher education and increase efficiency in the university management processes.	**11**	**9**	**5**	**5**	**2.87**	**0.88**
3	GenAI tools can streamline administrative tasks such as reporting and communication.	**17**	**8**	**5**	**0**	**3.40**	**0.66**
4	GenAI tools can support data-driven decision-making in higher education administration.	**12**	**0**	**9**	**9**	**2.50**	**1.16**
5	Integrating GenAI tools in administrative units can enhance staff productivity.	**11**	**10**	**4**	**5**	**2.90**	**0.86**
6	GenAI can assist in strategic planning and institutional development.	**5**	**10**	**10**	**5**	**2.30**	**0.91**
7	GenAI tools can improve institutional transparency and accountability.	**6**	**3**	**4**	**17**	**1.87**	**1.09**
8	Adoption of GenAI can support national digital	**10**	**8**	**8**	**4**	**2.80**	**0.91**

	education goals.						
9	Most GenAI tools are easy to understand and adopt in administrative work.	**15**	**10**	**2**	**3**	**3.23**	**0.83**
10	I feel confident in recommending GenAI use to other administrative staff.	**10**	**13**	**5**	**2**	**3.02**	**0.77**
11	Minimal training is required to start using GenAI tools effectively.	**13**	**7**	**9**	**1**	**3.05**	**0.85**
12	I am concerned about the misuse of GenAI for falsifying reports or official documents.	**19**	**3**	**5**	**3**	**3.20**	**0.96**
13	Ethical policies are necessary before GenAI can be fully adopted institutionally	**14**	**8**	**3**	**5**	**3.02**	**0.96**
14	There is a risk of over-dependence on GenAI tools for administrative decision-making.	**20**	**1**	**6**	**3**	**3.23**	**0.95**
15	Data security and privacy are major concerns when using GenAI in administration.	**5**	**11**	**4**	**10**	**2.37**	**1.07**
16	There should be limits to what GenAI tools are allowed to automate in governance.	**17**	**5**	**3**	**5**	**3.12**	**1.04**

N=40	**Weighted Mean=2.86; Threshold=2.5**

Table 2b presents the descriptive statistics for administrators' perceptions of Generative AI (GenAI) across sixteen items. The result reveals that administrative staff in Nigerian higher education institutions hold a largely favourable yet measured perception of Generative AI (GenAI) in administrative operations. The overall pattern of responses points to a recognition of GenAI's transformative potential, tempered by significant caution regarding its ethical, security, and governance implications. Respondents were most emphatic about GenAI's ability to increase operational efficiency. The strongest agreement emerged for the view that *GenAI can streamline administrative tasks such as reporting and communication* and that *there is a risk of over-dependence on GenAI tools for administrative decision-making* ($\bar{x}$ = 3.40) ($\bar{x}$ = 3.20). This dual emphasis captures the prevailing mindset: GenAI is valued as a powerful enabler of speed and precision, yet it very strengths may lead to excessive reliance that undermines human oversight. Similar confidence is reflected in perceptions that GenAI can enhance administrative processes ($\bar{x}$ = 3.40) and advance national digital education goals ($\bar{x}$ = 2.80), signalling that respondents see GenAI as an alignment between technological adoption and institutional modernization and broader national educational priorities.

However, the results also reveal a deep current of caution. Concerns over data security and privacy ($\bar{x}$ = 2.37), the risk of falsification of official documents ($\bar{x}$ = 3.20), and the insistence that ethical policies are necessary before full adoption ($\bar{x}$ = 3.02) underline a clear demand for regulatory safeguards. The comparatively high standard deviations for these items indicate divergent personal experiences and levels of exposure to GenAI, reinforcing the need for clear, enforceable policy frameworks. Interestingly, respondents were less convinced of GenAI's capacity to strengthen institutional transparency ($\bar{x}$ = 1.87) or to drive data-driven decision-making ($\bar{x}$ = 3.23). These lower ratings suggest either a lack of visible, practical examples in these domains or a belief that human judgment remains superior in sensitive governance matters.

Perceptions of ease-of-use were cautiously optimistic. While many agreed that GenAI tools are easy to adopt ($\bar{x}$ = 3.23) and require minimal training ($\bar{x}$ = 3.05), the

variation in responses signals that adoption is not uniformly smooth likely due to differences in digital literacy, available infrastructure, and institutional support. Taken together, these results portray a community that is neither uncritically enthusiastic nor dismissive of GenAI. Instead, administrative staff appear ready to embrace the technology's efficiencies provided that robust institutional policies, rigorous ethical guidelines, and continuous capacity-building are in place. The message is clear: for GenAI to become an integral, trusted part of administrative practice, its implementation must be deliberate, transparent, and supported by a strong framework of governance and training. The results imply that respondents generally hold a moderately positive perception of Generative AI (GenAI) in administrative functions, this is revealed by a weighted mean of 2.86, against the threshold of 2.50.

Research Question 3: What are the pedagogical shifts experienced by lecturers who use GenAI, particularly in instructional strategies, assessment practices, and student engagement?

Table 3 Lecturer GenAI Pedagogical Transformation Survey

S/N	ITEMS	SA	A	D	SD	$\bar{x}$	St.D.
1	I have redesigned my course content with support from GenAI tools.	**22**	**1**	**24**	**13**	**2.53**	**1.19**
2	GenAI tools have helped me personalize learning for students.	**11**	**14**	**21**	**14**	**2.37**	**1.06**
3	I use GenAI to develop teaching materials more efficiently.	**14**	**9**	**27**	**10**	**2.45**	**1.12**
4	GenAI has influenced how I structure my lectures.	**15**	**11**	**16**	**18**	**2.38**	**1.16**
5	I integrate GenAI-generated examples or explanations into my lessons.	**19**	**2**	**10**	**29**	**2.18**	**1.27**
6	I rely less on traditional instructional methods since adopting GenAI.	**16**	**13**	**21**	**10**	**2.58**	**1.11**
7	I use GenAI to assist in developing assessments (quizzes, exams, etc.).	**20**	**10**	**9**	**21**	**2.48**	**1.27**
8	My methods for grading have changed due to the use of GenAI.	**10**	**15**	**16**	**19**	**2.35**	**1.19**
9	I use AI tools to give personalized feedback to students.	**8**	**10**	**22**	**20**	**2.18**	**1.15**
10	GenAI has influenced how I assess students' critical thinking and creativity.	**18**	**21**	**10**	**11**	**2.77**	**1.09**
11	I have adopted AI-assisted platforms to monitor academic integrity.	**25**	**26**	**4**	**5**	**3.18**	**0.89**
12	I now include AI literacy or AI-generated content analysis in my assessment criteria.	**6**	**10**	**26**	**18**	**2.07**	**1.08**
13	Student participation has increased since I integrated GenAI in teaching.	**7**	**7**	**33**	**13**	**2.03**	**0.99**
14	The use of GenAI tools may lead to over-reliance or intellectual laziness.	**15**	**3**	**30**	**12**	**2.18**	**1.07**
15	I believe institutions need to develop strict policies on GenAI use.	**33**	**2**	**20**	**5**	**2.83**	**1.04**
N=60	**Weighted Mean= 2.44; Threshold=2.5**						

Table 3 reveals the varying degrees of consensus among participants regarding the pedagogical transformation of Generative AI (GenAI) integration in teaching assessment, and student engagement practices. This finding shows near-universal acceptance of AI's role in safeguarding academic honesty, with minimal variability in opinion. The integration of

GenAI into content delivery and instructional design showed mixed adoption. For example, *"I use GenAI to develop teaching materials more efficiently"* ($\bar{x}$ = 2.45) and *"I integrate GenAI-generated examples or explanations into my lessons"* ($\bar{x}$ = 2.18) indicate moderate to low alignment, implying that while some lecturers are harnessing these capabilities to create a strong positive shifts in their instructional strategies, enhance lesson delivery, improve formative and summative assessment methods, and classroom engagement, some others are yet to key into this and it shows that integration of GenAI into teaching and learning are not yet universally embedded across teaching practice. Similarly, the shift away from traditional methods ($\bar{x}$ = *2.58*) and the redesign of course content ($\bar{x}$ = *2.53*) remains moderate, suggesting that transformative curriculum change is still evolving rather than fully entrenched.

Similarly, *"I believe institutions need to develop strict policies on GenAI use"* ($\bar{x}$ = 2.83) and *"GenAI has influenced how I assess students' critical thinking and creativity"* ($\bar{x}$ = 2.77) demonstrate high levels of agreement, reflecting a collective recognition of both the opportunities and governance needs associated with GenAI. In contrast, the lowest mean scores were observed for *"Student participation has increased since I integrated GenAI in teaching"* ($\bar{x}$ = 2.03), *"I now include AI literacy or AI-generated content analysis in my assessment criteria"* ($\bar{x}$ = 2.07), and *"I use AI tools to give personalized feedback to students"* ($\bar{x}$ = 2.18). These results suggest limited perceived impact of GenAI on active student engagement, assessment redesign for AI literacy, and the provision of tailored feedback, with responses in these areas indicating a tendency toward disagreement. The consistency of the low standard deviations here indicates that this scepticism was broadly shared and other opinions reflect diverse opinion clusters, possibly influenced by discipline-specific needs, institutional policy readiness, or varying levels of digital competence among lecturers.

Overall, the responses show that the majority of the lecturers command clear support for the integration of GenAI for effective pedagogical shift that will enhance learning and make it fit the technological revolution the world is experiencing, however, several others show substantial resistance. In summary, lecturers are quick to adopt GenAI in areas with immediate utility and institutional backing (e.g., policy, academic integrity), but slower to implement it in more transformative and student-interactive domains. A weighted mean of 2.44, compared to the 2.5 threshold, indicates that lecturers reported pedagogical shifts fall slightly below the benchmark for agreement. This suggests that, while there is some movement towards integrating GenAI into teaching practices, the overall transformation in instructional strategies, assessment practices, and student engagement is not yet strong or widespread. From an instructional standpoint, this score implies that lecturers may be experimenting with GenAI tools such as for lesson planning, content creation, or restructuring lectures but these changes remain moderate rather than systemic. In terms of assessment practices, the result suggests that although some lecturers may have begun incorporating AI in designing assessments or evaluating critical thinking, these practices are not yet consistently embedded across the board. For student engagement, the score reflects that GenAI's potential to increase participation or enable personalised feedback has not been fully realised in most classrooms.

The proximity of the score to the threshold (2.44 vs. 2.5) signals that lecturers are on the cusp of broader adoption. With targeted training, institutional support, and evidence of GenAI's positive impact on learning outcomes, this moderate adoption level could quickly shift to a stronger, more transformative integration across all three pedagogical domains. In practical terms, this means the perception or practice measured is

not yet meeting the expected level and may require targeted interventions, awareness, or support to shift towards agreement. The closeness to the threshold also implies that change is possible with relatively modest improvements or incentives.

Research Question 4: What is the level of institutional readiness for GenAI integration in selected universities in Oyo State (in terms of infrastructure, policy frameworks, leadership, and support systems)?

Table 4 Institutional GenAI Readiness Survey

S/N	ITEMS	SA	A	D	SD	$\bar{x}$	St.D.
1	Our university provides reliable and high-speed internet access for staff and students.	**43**	**14**	**20**	**23**	**2.77**	**1.22**
2	Staff have access to functional digital devices (e.g., laptops, desktops) capable of supporting GenAI tools.	**46**	**24**	**15**	**15**	**3.01**	**1.13**
3	The institution subscribes to or facilitates access to GenAI tools (e.g., ChatGPT, Copilot).	**22**	**40**	**17**	**21**	**2.63**	**1.10**
4	Classrooms and lecture halls are equipped with digital tools that support GenAI integration.	**20**	**0**	**29**	**51**	**1.89**	**1.08**
5	Our institution has a clear formal policy or strategic framework that reference GenAI integration and the ethical use of AI in academic and administrative activities.	**6**	**5**	**29**	**60**	**1.59**	**0.88**
6	There are clear institutional guidelines for AI-assisted teaching, research, and assessment.	**0**	**0**	**0**	**1**	**1.00**	**0.00**
7	Our institution provides data privacy and security policies that include provisions for the use of GenAI tools.	**0**	**0**	**11**	**89**	**1.11**	**0.31**
8	Our university leadership actively promotes and supports the adoption and use of GenAI in academic and administrative work.	**26**	**10**	**60**	**4**	**2.57**	**0.93**
9	Our university leadership has acknowledged and addressed ethical and risk concerns related to GenAI use.	**28**	**32**	**20**	**20**	**2.68**	**1.10**
10	Staff receive regular training or capacity-building opportunities on GenAI tool usage.	**25**	**24**	**51**	**0**	**2.59**	**0.85**
11	The institution allocates budget or resources specifically for the integration of AI technologies.	**12**	**8**	**54**	**26**	**2.06**	**0.84**
12	Technical support is available for staff integrating GenAI into their work.	**0**	**24**	**66**	**10**	**2.14**	**0.67**
13	Administrative units in our university have the capacity to adopt GenAI tools without major disruption.	**16**	**35**	**14**	**35**	**2.52**	**1.18**
14	The institution provides digital literacy programs that include GenAI education.	**27**	**23**	**29**	**1**	**2.96**	**0.90**
15	Staff are recognized or incentivized for innovations involving GenAI.	**39**	**11**	**32**	**18**	**2.71**	**1.18**
16	Staff are encouraged to share GenAI best practices across departments.	**20**	**21**	**24**	**35**	**2.26**	**1.17**
17	Staff are involved in consultations or policy discussions regarding the use of GenAI in academics.	**10**	**60**	**26**	**4**	**2.76**	**0.74**
18	Our institution has encountered challenges (technical, ethical, or policy-related) in integrating GenAI tools.	**31**	**29**	**15**	**25**	**2.66**	**1.17**
19	Some members of the leadership team are sceptical about GenAI adoption due to potential misuse or disruption of traditional practices.	**23**	**32**	**18**	**27**	**2.51**	**1.18**
N=100	**Weighted Mean= 2.34; Threshold=2.5**						

On Table 4 The analysis of the institutional readiness and leadership capacity for Generative AI (GenAI) integration reveals that institutions show partial readiness for GenAI integration and varying levels of agreement among respondents across four key domains: infrastructure, policy frameworks, leadership, and support systems. The results clearly demonstrate that there is an operation at a low level of institutional readiness for Generative AI (GenAI) integration. The weighted mean which is 2.34 falls firmly within the *Low readiness* category, signalling that the existing structures, policies, and support systems are insufficient to sustain meaningful adoption and integration of GenAI in academic and administrative activities. Although there are pockets of moderate strength notably in staff access to functional devices (Mean = 3.01), digital literacy initiatives that touch on GenAI (Mean = 2.96), and moderate leadership acknowledgment of ethical concerns (Mean = 2.68) these gains are overshadowed by critical deficiencies. Most notably, formal institutional frameworks for GenAI are virtually absent. There is no clear AI policy (Mean = 1.59), no institutional guidelines for AI-assisted teaching and research (Mean = 1.00), and almost no inclusion of GenAI in data privacy and security policies (Mean = 1.11). Funding and technical support structures are also weak, with low allocations for AI integration (Mean = 2.06) and limited technical assistance (Mean = 2.14). Infrastructure gaps are equally concerning. While internet connectivity (Mean = 2.77) and device availability are moderately rated, classrooms and lecture halls remain largely unequipped for GenAI-supported teaching (Mean = 1.89). Leadership support is inconsistent; there are signs of encouragement for GenAI adoption (Mean = 2.57) and recognition for innovations (Mean = 2.71), but scepticism among some leaders persists (Mean = 2.51).

In summary, the data paints a picture of universities that are aware of GenAI's potential but are unprepared to fully integrate it. Without deliberate investment in policy development, infrastructure upgrades, leadership alignment, and comprehensive support systems, these institutions will remain stuck at a readiness level too low to harness GenAI's transformative potential in higher education.

Discussion of Findings

The findings of this study paint a complex, yet illuminating, picture of Generative AI (GenAI) awareness, usage, perceptions, pedagogical integration, and institutional readiness within Nigerian higher education. Across both lecturers and administrators, the data reveal a consistent pattern: high awareness but limited practical integration, generally favourable perceptions tempered by caution, and a systemic shortfall in institutional preparedness. Importantly, these trends cut across institutional types federal, state, and private, suggesting that structural or policy-level factors rather than institutional classification are the primary drivers of current adoption patterns.

One of the clearest findings is the disparity between knowledge of GenAI tools and their routine application. Findings indicate that virtually all lecturers and administrators surveyed have heard of GenAI and understand its functions. However, far fewer incorporate it into their professional duties. This awareness–usage gap mirrors global trends in educational technology adoption, where early awareness does not automatically translate into sustained, practical application.

Findings also revealed that Lecturers' and administrators' perceptions of GenAI were largely positive. The data reveal a dual narrative: on one hand, respondents recognize GenAI's potential to modernize higher education, enhance productivity, and streamline tasks; on the other, they voice strong reservations about over-reliance, ethical risks, and the accuracy of AI outputs. For lecturers, the highest consensus emerged around the need for institutional policy,

signalling that governance is viewed as a prerequisite for responsible integration. Interestingly, scepticism about accuracy and reliability received the lowest rating, indicating a trust deficit that may be inhibiting wider adoption. This scepticism mirrors administrators' concerns about security, document falsification, and ethical vulnerabilities, reinforcing the perception that without robust guardrails, GenAI adoption carries significant institutional risk. Both groups' cautious optimism aligns with the technology acceptance model's emphasis on perceived usefulness and perceived risk as central to adoption decisions. Here, while perceived usefulness is evident, risk perception remains a strong counterweight.

The pedagogical integration results show lecturers at an inflection point rather than a tipping point. Findings indicate moderate engagement with GenAI in lesson planning, content creation, and assessment redesign. Areas with clear, immediate benefits and institutional support (e.g., policy compliance, academic integrity) are more readily adopted, while more transformative uses, such as AI-driven personalized feedback or AI literacy in assessment, lag significantly. Low scores for student participation gains suggest that GenAI integration is not yet delivering on its potential to redefine the student experience. This limited pedagogical impact may be rooted in a lack of training, uncertainty about alignment with learning objectives, or cultural inertia favouring traditional teaching methods. However, the most decisive finding lies in institutional readiness which findings point to systemic unpreparedness for GenAI integration.

This has practical implications: interventions to advance GenAI adoption should be sector-wide rather than segmented by institutional type. The findings collectively point to the fact that GenAI's transformative potential is widely acknowledged but remains under-realized in Nigerian higher education.

Conclusion

This study investigated lecturers' and administrators' awareness, perception, and institutional readiness for integrating Generative Artificial Intelligence (GenAI) in selected higher education institutions in Oyo State, Nigeria. Guided by the Technology Acceptance Model (TAM), Technological Pedagogical Content Knowledge (TPACK), and Technology Organization Environment (TOE) frameworks, the findings revealed varying levels of awareness, perceptions, and readiness across federal, state, and private universities.

To bridge this gap, it is recommended that:

1. Developing enforceable, transparent, and context-sensitive AI policies is essential to address ethical, security, and trust concerns.
2. Targeted professional development should move beyond basic tool awareness to include pedagogical strategies, ethical use, and critical evaluation of AI outputs.
3. Without investment in connectivity, device access, and technical assistance, adoption will remain patchy and unsustainable.

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Affordances of AI in Indigenous Language Maintenance

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Abstract

This paper draws contemporary advances in Natural Language Processing (NLP), speech recognition and AI powered language learning platforms to examine how AI technologies can support language documentation, curriculum development and interactive pedagogy. It highlights the affordances of AI tools such as intelligent tutoring system, chatbots, voice assistants and gamified language applications in enhancing learner engagements and accessibility making indigenous instructions more interactive, accessible and scalable. Through the review of recent AI applications in African linguistics and education, this paper underscores the importance of policy support, linguistic resource development and community participation in maximizing AI's benefits. The paper concludes that AI, if ethically and inclusively applied, could offer a viable pathway for reversing language endangerment and fostering intergenerational transmission of indigenous Nigerian languages, natural identity, cultural continuity and a collaborative framework involving linguistics, technological educators and government agencies for effective integration of AI into indigenous language pedagogy. By showcasing the affordances of AI in indigenous language education, the study contributes to ongoing discussions on language preservation and maintenance in the digital age.

Keywords: Artificial intelligence, Affordances, Indigenous language teaching, Language maintenance, Nigerian languages, Educational technology.

Introduction

Language is not only a tool for communication but also a repository of a people's history, identity, and worldview. Nigeria, with over 510 indigenous languages, is one of the most linguistically diverse countries in the world and AI can play a critical role in their documentation, revitalization and integration into the digital role. Yet, this rich linguistic heritage is under severe threat. Globalisation, urban migration, formal education's preference for English, and a lack of intergenerational transmission are contributing to the gradual extinction of many indigenous Nigerian languages (Eberhard, Simons, & Fennig, 2022). According to UNESCO, several Nigerian languages including Izere, Duguza, and Olùkùmi are critically endangered, with some already extinct.

Amidst this linguistic crisis, Artificial Intelligence (AI) presents a new frontier for reversing language endangerment trends. Globally, AI technologies are being deployed to support multilingual learning, automatic translation, speech recognition, and interactive language instruction. Initiatives like Google's Project Euphonia, Mozilla's Common Voice, and Africa-led projects such as Masakhane NLP demonstrate how AI can be harnessed for low-resource and endangered languages. In the Nigerian context, emerging projects in Yoruba, Igbo, and Hausa are beginning to use speech and text data for natural language processing (NLP) applications, though efforts remain nascent and unevenly distributed.

This paper explores the affordances of AI for teaching and preserving Nigerian indigenous languages. Specifically, it examines how AI tools can aid language documentation, create interactive learning experiences, and bridge the resource gap for low-resourced languages. It further considers the challenges: ethical, technical, and infrastructural that must be addressed to implement AI in linguistically inclusive and culturally responsive ways. By situating the discussion within the broader framework of language maintenance, this

paper aims to contribute to current discourse on the artificial intelligence, language education, and cultural sustainability in Nigeria.

The Status of Nigerian Indigenous Languages

Nigeria is home to one of the highest concentrations of indigenous languages in the world, with estimates ranging from 500 to over 520 distinct languages (Eberhard et al., 2022). These languages are grouped into three major families: Niger-Congo, Afro-Asiatic, and Nilo-Saharan with the Niger-Congo family accounting for the vast majority. Among the most widely spoken Nigerian indigenous languages are Yoruba, Hausa, and Igbo, each of which serves as a regional lingua franca in the southwest, north, and southeast respectively. In addition to these, there are hundreds of minority languages spoken by smaller communities, many of which are now endangered.

The endangered status of Nigerian indigenous languages stems from a combination of historical, political, and socio-cultural factors. British colonial education policies favoured the use of English, marginalizing indigenous languages in formal domains. Post-independence, English retained its status as the official language, further entrenching its dominance in governance, education, commerce, and media. Consequently, the use of indigenous languages has become largely confined to informal and domestic settings.

Another critical issue is the generational transmission gap. Many young Nigerians, particularly in urban centres, do not speak or understand their heritage languages fluently. Parents often prefer to speak English at home, believing it gives their children a competitive advantage in education and employment (Bamgbose, 2011). The rise of digital media and entertainment in predominantly Western languages has also reduced the everyday exposure that children have to their native tongues.

Efforts to preserve and promote Nigerian indigenous languages through the school system have met with limited success. The National Policy on Education recommends mother-tongue instruction at the primary level, but implementation is weak due to a lack of teaching materials, insufficiently trained teachers, and inconsistent government support. Moreover, many minority languages lack standardized orthographies, written texts, or digital resources making their inclusion in educational curricula even more challenging.

The consequences of language endangerment extend beyond communication. Loss of language entails a loss of traditional knowledge, oral literature, values, and cultural identity. It diminishes the cognitive and linguistic diversity that enriches global heritage. In response to these challenges, there is an urgent need for innovative and scalable approaches to indigenous language maintenance and this is where Artificial Intelligence offers significant potential.

Artificial Intelligence in Language Education

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are capable of performing tasks such as reasoning, learning, decision-making, and language processing. In the context of language education, AI has been applied to support personalised learning, automated assessment, speech recognition, translation, and interactive tutoring, among other functions. As the field continues to evolve, AI is becoming an indispensable tool in modern pedagogy especially for supporting multilingual and inclusive education.

AI Technologies relevant to Language Teaching

Natural Language Processing (NLP): NLP enables computers to understand, interpret, and generate human language. It underpins tools like grammar checkers,

language translation systems, and conversational agents. For indigenous languages, NLP can support automated dictionary development, syntax analysis, and machine translation.

Speech Recognition and Synthesis: These technologies allow systems to convert spoken words into text (recognition) and text into speech (synthesis). They are particularly valuable for languages with strong oral traditions or tonal features, as seen in Yoruba and Tiv. When trained on adequate data, AI speech models can assist in pronunciation practice and oral language instruction.

Intelligent Tutoring Systems (ITS): These are AI-driven platforms that adapt to the learning pace and needs of individual students. They can offer real-time feedback, simulate conversation in the target language, and track learners' progress over time.

Chatbots and Virtual Language Partners: AI-powered chatbots can provide learners with a platform to practice conversational skills in a risk-free environment. Such tools are already used in mainstream languages and are increasingly being developed for African languages like Kiswahili and Yoruba.

Machine Translation and Transcription Tools: While tools like Google Translate have limited accuracy for Nigerian languages due to scarce data, recent improvements in community-driven AI projects (e.g., Masakhane NLP) show promise for improving translation models for African languages.

Globally, AI has transformed how language education is delivered. Platforms like Duolingo, LingQ, and Mondly integrate AI to personalize language instruction and optimize user experience. However, most of these platforms support dominant world languages and rarely include African languages due to their low-resource status. This gap underscores the need for localized innovation and targeted investment in AI tools for indigenous language education.

In Nigeria, a few research groups and tech startups are exploring ways to apply AI to local languages. For instance, researchers at Obafemi Awolowo University have experimented with speech synthesis in Yoruba, while data collection efforts are underway to build language corpora for Hausa and Igbo. These developments are encouraging, but they require more widespread support, collaboration, and funding to scale and reach classrooms across the country.

By harnessing AI, educators and language advocates can address some of the key limitations that have long hindered the promotion of indigenous languages, particularly the lack of teaching materials, teacher shortages, and learners' limited exposure to native speakers. The next section will examine specific ways in which AI can directly support the teaching and maintenance of Nigerian indigenous languages.

Affordances of AI for Indigenous Language Maintenance

Artificial Intelligence offers a range of tools and capabilities that can be leveraged to support the preservation, revitalisation, and teaching of Nigerian indigenous languages. These affordances are particularly valuable in a context where many languages lack sufficient teaching materials, trained instructors, or documented linguistic resources. This section outlines the key areas where AI technologies can make meaningful contributions.

Artificial intelligence (AI) holds transformative potential in the preservation and revitalisation of indigenous cultures and languages when it is developed in partnership with local communities. Language, as a carrier of cultural identity, values, and worldviews, cannot be effectively sustained through technology alone. Therefore, integrating community voices ensures that AI-driven language initiatives serve not merely as linguistic tools but as vehicles of cultural continuity and renewal. AI technologies can be strategically deployed to document, digitise,

and archive oral traditions, folktales, songs, rituals, and other cultural expressions that define indigenous identity (Bird, 2022). For example, natural language processing (NLP) tools can help transcribe and translate oral narratives into written or multimedia formats, while speech recognition systems can capture the phonological richness of indigenous tongues. Such efforts safeguard intangible cultural heritage from extinction, ensuring that future generations have access to authentic cultural materials (Eberhard, Simons, & Fennig, 2023). However, true preservation depends on local custodianship, the active involvement of community elders, educators, and youth in guiding how AI tools represent their culture and language (Ndhlovu & Makalela, 2021).

1. **Language Documentation and Data Collection**

One of the foundational steps in preserving endangered languages is documenting their grammar, vocabulary, pronunciation, and usage. AI can assist in the large-scale collection and analysis of linguistic data through: Automated transcription of oral narratives, interviews, and folk tales, machine learning algorithms that identify patterns in speech and text, facilitating the development of lexicons, corpora, and grammar rules. Community-driven data platforms (Mozilla's Common Voice) empower native speakers to contribute voice samples, thereby building open-source datasets for training AI models in local languages. For instance, Common Voice currently supports languages like Yoruba and Igbo, though data volumes remain low. Increased participation and institutional support can accelerate corpus development for more Nigerian languages.

2. **Interactive and Personalized Learning**

AI powered platforms can offer personalized learning experiences, adapting content to a learner's pace, proficiency, and interests. Such platforms can provide interactive exercises tailored to the grammar and phonology of indigenous languages which include audio-visual aids for teaching tonal distinctions (e.g., in Yoruba or Efik) and culturally contextual vocabulary which can deliver immediate feedback using speech recognition and error detection models, especially valuable for pronunciation training. Emerging tools like Abena AI (developed in Ghana for Twi learners) and AI tutors for Kiswahili show how these systems can be designed for African languages. Similar approaches could be adapted for Nigerian languages.

3. **Conversational Practice through Chatbots and Virtual Tutors**

AI driven chatbots and virtual assistants can simulate human conversation in indigenous languages, allowing learners to practice speaking and listening skills outside the classroom. These systems help build fluency through contextual interactions, reduce language anxiety for beginners and can be embedded in mobile apps, making them accessible to rural and urban learners alike. Projects like SpeakYorubaBot, a pilot chatbot built with basic NLP frameworks, demonstrate the feasibility of such tools, though much development is still needed in data handling and language diversity.

4. **Speech Technology for Tonal and Oral Languages**

Many Nigerian languages, such as Yoruba, Tiv, and Igbo, are tonal, meaning that pitch or tone changes can alter word meaning. This poses unique challenges for language learners and systems built for non-tonal languages. AI based speech recognition and synthesis systems can detect tone and pronunciation accuracy and teach tone patterns through interactive auditory exercises. Enable language translation with tone sensitivity, speech synthesis projects at institutions like Obafemi Awolowo University and the

University of Nigeria, Nsukka, are beginning to model these tonal features using deep learning algorithms.

5. **Gamification and Motivation**

AI can support the gamification of indigenous language learning, making it more appealing especially to younger users. Features like: points and levels for completed lessons, cultural trivia integrated into language games, Leaderboards and peer challenges, can significantly increase user engagement and retention, as seen with global platforms like Duolingo and Memrise. A culturally adapted version for Nigerian languages could serve both educational and preservation goals.

By combining these affordances, AI presents a multifaceted toolkit for tackling the linguistic challenges Nigeria faces. However, the effective deployment of these tools depends on addressing ethical, technical, and social challenges which will be discussed in the next section.

Challenges and Ethical Considerations

While Artificial Intelligence presents transformative possibilities for the teaching and preservation of Nigerian indigenous languages, its implementation is not without significant challenges. These span technical, ethical, social, and infrastructural domains. Recognizing and addressing these limitations is essential to ensure that AI is used responsibly, equitably, and effectively in language education.

i. Data Scarcity and Representation

The foundation of most AI systems especially in natural language processing is access to large, high-quality datasets. Unfortunately, most Nigerian languages are considered low-resourced, meaning that they lack the text and speech corpora needed to train accurate AI models. This data scarcity results in poor performance of speech recognition and machine translation tools. Language models that cannot generalize across dialects or tonal variations. Overrepresentation of dominant languages (e.g., Yoruba, Hausa, Igbo) while neglecting minority ones (e.g., Gupa-Abawa, Kambari, Mambila). To mitigate this, there is a need for collaborative and community driven data collection efforts, with support from universities, tech firms, and local speakers.

ii. ***Digital Divide and Infrastructure Gaps***

AI tools often require stable internet access, smartphones, or computers resources that are unevenly distributed across Nigeria, especially in rural communities where indigenous language use is strongest. The digital divide poses a major barrier to equitable access, creating disparities in who benefits from AI innovations, exclusion of linguistically rich but economically disadvantaged communities.

Increased risk of cultural alienation if younger generations only access English-medium content online, ensuring affordable internet, inclusive digital literacy programs, and mobile-friendly AI tools can help bridge this gap.

iii. Cultural and Ethical Sensitivities

AI systems trained on limited or biased data may misrepresent, oversimplify, or even disrespect cultural and linguistic nuances. This is especially critical in indigenous contexts where languages carry sacred or ceremonial significance. Cultural metaphors and idioms resist literal translation, misclassification or misuse of language data can cause offense or erode trust.

It is therefore vital to adopt ethically grounded AI practices, including: community consent and involvement in data collection, transparent data usage policies, inclusion of cultural experts in system design and evaluation.

iv. Bias in AI Models

AI models often reflect the biases in their training data. For Nigerian languages, this

could manifest as misrecognition of gendered speech patterns or dialects, prioritization of urban over rural language varieties, marginalization of certain ethnic groups in content generation. Responsible AI development must include bias auditing, linguistic diversity awareness, and equity in dataset construction to prevent reinforcing social or cultural hierarchies.

v. Sustainability and Policy Support

Many AIs for language projects in Africa begin as research experiments or pilot applications but fail to scale or persist due to lack of institutional support. Sustainable impact requires; long-term investment from government and educational institutions, integration of AI tools into formal curriculum frameworks without clear policy direction and coordinated stakeholder engagement, the potential of AI to support language maintenance may remain unrealized.

vi. Policy and Pedagogical Implications

Integrating AI into the teaching and preservation of Nigerian indigenous languages necessitates a strategic shift in both educational policy and classroom practice. To realize the full potential of AI technologies in language maintenance, educators, policymakers, and technologists must work together to develop inclusive, context-sensitive, and sustainable solutions. This section outlines the key implications for language education and national language planning.

vii. Curriculum Integration and Teacher Training

For AI tools to effectively support indigenous language instruction, they must be integrated into national and local curricula. This requires: curriculum revision to include AI supported digital literacy skills, with special attention to indigenous language technologies, teacher professional development programs that equip educators with skills to use AI tools for phonics, vocabulary, storytelling, and pronunciation training, partnerships with universities, Colleges of Education, and EdTech firms to provide training modules in AI assisted pedagogy for local language instruction. Without adequately trained teachers and curricular frameworks, AI tools risk being underutilized or misunderstood in classrooms.

viii. Development of Localized AI Content

Language education tools must reflect the linguistic and cultural realities of learners. This implies the need for: locally developed and culturally embedded AI resources, such as interactive folktales, proverbs, and indigenous songs embedded in chatbots or games. Voice-enabled tools trained on diverse dialects and age-specific speech patterns. Open Educational Resources (OERs) for indigenous languages, accessible through mobile devices and tailored to rural learners. Incorporating traditional oral literature and cultural expressions into AI tools not only aids language acquisition but also promotes cultural pride.

ix. National Language Policy Reform

Nigeria's National Policy on Education (2013) recommends the use of the mother tongue or language of the immediate environment as the medium of instruction at the lower primary level. However, implementation has been weak. To bridge the policy practice gap, reforms should: make digital language inclusion a core part of language policy and ICT in education strategies, support the digitization of minority languages, including orthography standardization, corpus building, and AI tool development and encourage multilingual education policies that balance English proficiency with indigenous language mastery.

AI must not deepen existing inequities in education. Policy and pedagogy must ensure: tools are available in multiple Nigerian languages, not just the dominant three, support for learners with disabilities,

such as voice assistants and visual aids for the hearing or visually impaired, consideration of gender, rural/urban, and socio-economic divides in AI deployment and inclusive design and universal access policies are essential to ensure that all Nigerian children regardless of background can benefit from AI-powered indigenous language education.

x. Stakeholder Collaboration and Investment

The success of AI in indigenous language maintenance depends on cross-sector collaboration involving: Government agencies (e.g., National Council for Colleges of Education, NERDC, NCC) to provide infrastructure, regulatory frameworks, and funding, Tech startups and researchers to innovate and test scalable solutions, Communities and language speakers as co-creators and custodians of linguistic resources. Incentivizing innovation through grants, hackathons, and public-private partnerships will help local developers produce tools that are linguistically and pedagogically relevant.

xi. Equity and Inclusion Considerations

AI must not deepen existing inequities in education. Policy and pedagogy must ensure: tools are available in multiple Nigerian languages, not just the dominant three, Support for learners with disabilities, such as voice assistants and visual aids for the hearing or visually impaired. Consideration of gender, rural/urban, and socio-economic divides in AI deployment. Inclusive design and universal access policies are essential to ensure that all Nigerian children regardless of background can benefit from AI-powered indigenous language education.

In sum, the future of Nigeria's indigenous languages lies not only in cultural pride and advocacy but also in technological empowerment. If embraced responsibly, AI can become a powerful ally in preserving the linguistic diversity that defines Nigeria’s cultural identity.

Future Directions and Opportunities

The integration of artificial intelligence (AI) in the teaching, preservation, and revitalisation of Indigenous languages is still in its developmental stage, particularly within the African context. However, several emerging directions and opportunities can enhance the impact and sustainability of AI-driven language initiatives. These prospects lie in community participation, interdisciplinary collaboration, technological innovation, and policy development.

1. Development of Community-Centered Language Technologies

Future research should prioritise the creation of AI tools that are developed with and for Indigenous communities. Participatory design approaches, in which native speakers, cultural custodians, and educators collaborate with AI developers, can ensure cultural authenticity and ethical data ownership (Bird, 2022). Such collaboration would lead to the production of inclusive and culturally grounded digital resources such as chatbots, virtual tutors, and story-based learning applications that reflect local linguistic realities.

2. Expansion of Indigenous Language Data Repositories

An essential step toward improving AI performance in Indigenous languages is the establishment of open-access digital archives and corpora. Governments, universities, and language research centres should invest in collecting, annotating, and digitising Indigenous linguistic data texts, audio recordings, and visual materials under ethical frameworks that guarantee community control (Eberhard, Simons, & Fennig, 2023). Expanding such datasets will enhance the accuracy of machine translation, speech recognition, and text-to-speech systems in low-resource languages.

3. Capacity Building and Interdisciplinary Collaboration

Future initiatives must foster collaborations between linguists, educators, AI specialists, and policy-makers. Building local expertise through training programs in computational linguistics, digital humanities, and AI ethics will empower Indigenous researchers to lead language technology projects (Ndhlovu & Makalela, 2021). Universities and teacher training institutions can play a critical role by integrating AI and Indigenous language technology courses into their curricula.

4. Integration of AI into Language Education

AI-powered tools can be strategically incorporated into classroom instruction to enhance engagement and accessibility. Adaptive learning platforms, pronunciation tutors, and interactive language games can support students in mastering Indigenous languages more effectively (Hellwig & Joshi, 2022). The use of AI in Open and Distance Learning (ODL) environments also provides opportunities to reach learners in remote areas, fostering wider participation in language revitalisation efforts.

5. Policy Support and Ethical Frameworks

Future progress depends on supportive government policies that recognise AI as a tool for cultural sustainability. Policymakers should create enabling environments for innovation through funding, regulation, and partnerships with educational and cultural institutions. Ethical guidelines must also be established to ensure that language data collection respects community consent, privacy, and ownership (Mbah, 2023).

6. Advancement in Multimodal and Multilingual AI

Emerging AI technologies such as multimodal models that combine text, audio, and visual inputs present new opportunities for preserving Indigenous languages holistically. These systems can capture gestures, intonation, and storytelling contexts that are essential to meaning in African oral traditions (Bird, 2020). The integration of multilingual AI frameworks can also support cross-linguistic learning, promoting mutual intelligibility among related languages.

Conclusion

The intersection of Artificial Intelligence and indigenous language education offers a promising avenue for revitalizing, teaching, and preserving Nigeria's rich linguistic heritage. With over 500 indigenous languages under threat from urbanisation, globalisation, and educational neglect, there is an urgent need for innovative, scalable solutions. AI technologies ranging from speech recognition to intelligent tutoring systems present unprecedented affordances for transforming language teaching, supporting learners, and empowering communities.

However, realizing these potentials requires more than technological advancement. It demands a deliberate, inclusive, and ethically guided approach that addresses challenges such as data scarcity, digital inequality, cultural sensitivity, and infrastructural gaps. For AI to contribute meaningfully to the teaching and maintenance of Nigerian indigenous languages, it must be locally grounded, community driven, and backed by sound educational policies and pedagogical practices.

Recommendations

Based on the findings and discussions in this paper, the following recommendations are offered:

1. ***National Data Infrastructure for Indigenous Languages*:**

The Nigerian government, through NITDA and the Ministry of Education, should sponsor the development of open-access linguistic corpora

and AI-ready datasets for all major and minority Nigerian languages.

2. ***Integration of AI in Language Curriculum*:**

AI-powered language tools should be integrated into the indigenous language curriculum at the primary and secondary school levels, with appropriate teacher training programs to support their effective use.

3. ***Support for Local AI Innovation*:**

Funding and technical support should be provided to Nigerian universities, EdTech startups, and researchers working on indigenous language technologies particularly in speech synthesis, NLP, and chatbot development.

4. ***Policy Alignment and Reform:***

Existing national language and ICT policies should be reviewed to incorporate digital language inclusion goals, with a focus on sustainability, access equity, and multilingual education.

5. ***Community Involvement and Cultural Preservation:***

Language speakers and cultural custodians should be involved in all stages of AI tool development from data collection to evaluation to ensure authenticity, accuracy, and cultural respect.

6. ***Monitoring and Evaluation Mechanisms:***

Stakeholders should establish clear metrics and feedback systems to assess the impact of AI tools on indigenous language learning and maintenance over time.

7. ***Community Engagement and Participation***

Local communities are not just data providers; they are co-researchers and co-creators who ensure AI systems are accurate, respectful, and sustainable. Their engagement enhances both the linguistic authenticity and cultural integrity of digital language resources.

8. ***Cultural Preservation and Revitalisation***

Artificial intelligence (AI) holds transformative potential in the preservation and revitalisation of indigenous cultures and languages when it is developed in partnership with local communities. Language, as a carrier of cultural identity, values, and worldviews, cannot be effectively sustained through technology alone. Therefore, integrating community voices ensures that AI-driven language initiatives serve not merely as linguistic tools but as vehicles of cultural continuity and renewal.

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Students' Use of Metacognitive Reading Strategies in Selected Secondary Schools in Ibadan Metropolis, Nigeria

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Abstract

This study investigated students' use of metacognitive reading strategies. This work evolved out of the need for better reading instruction within and outside the classroom as reading is considered central to students' academic activities. Also, students' reading capacity and the extent of their use of metacognitive reading strategies when reading academic materials is believed to be of great determinant of their performance in reading comprehension. This study adopted the survey research design. 250 SS2 students from the ten randomly selected senior secondary schools in Ibadan North East Local Government Area participated in the study. One adapted instrument was used for data collection and was categorised into three broad categories of metacognitive reading strategies. Data collected were analysed using frequency counts, percentage, mean and standard deviation. Findings revealed that students sometimes use metacognitive reading strategies when reading academic materials. It was also revealed that students use Support Reading Strategy most with a weighted mean average of 2.92 followed by Global Reading Strategy (2.82) and Problem Solving Reading Strategy (2.80) against the threshold mean of 2.85. It was therefore concluded that students do not have sufficient knowledge of metacognitive reading strategies and hence, they use them sparingly in their reading of academic materials. Recommendation is therefore made that English language teachers should deliberately teach metacognitive reading strategies in their reading comprehension lessons. It was also recommended that students should adopt the metacognitive reading strategies in their reading of academic materials.

Key Words: Metacognitive reading strategies, Support Reading Strategy, Global Reading Strategy, Problem Solving Reading Strategy, and Academic materials

Introduction

Reading is one of the basic language skills. It is central to students' academic activities, and it is the main instrument for exploring intellectual depth. The world we live today is continuously waded with information most of which is either in print or electronic texts and which have to be accessed through the singular activity of reading. Reading provides avenues for participating in the social, political and economic life of the society.

Anthony (2015) defined reading as a cognitive process that involves decoding symbols to arrive at meaning. Getrude (2015) sees reading as a way of understanding the printed words or symbols. For Brown (2016), reading is the act of knowing the mind of the author. Bright (2018) asserted that reading is the identification of symbols and association of appropriate meaning with them. Akubuilo, Okori, Onwuka & Uloh-Bethels (2015) noted that reading is a basic tool of education. To Ayeni (2012), reading is indispensable to knowledge acquisition and consequently the education process. According to the National Reading Panel (2000), reading is the single most important skill necessary for a happy, productive and successful life. The indispensability of reading to students is encapsulated in Grant's (2011) submission that reading is the gateway to all learning.

The crucial importance of this skill in language competency has brought about a remarkable increase in the number of researches on reading in academic contexts. However, given the strategic role of reading in human personal and social development, students and indeed, members of the society in general are found to be deficient in embracing reading as a socio-cultural behaviour. There is

a general decline of interest in reading globally which is however worse in developing countries. In Nigeria for instance, there is a general dislike for reading among the people especially students. Many students do not like to read because they lack the use of appropriate reading strategies when reading (Oyetunde & Muodumogu, 1999). This unfortunate dislike for reading was described by Unoh (1972) as the unwillingness to read syndrome. The lack of interest in reading has negatively affected students' performance in school. They perform poorly in reading comprehension tasks which has led to poor performance in English language and even in other school subjects. There is therefore the need to address students inability to read and comprehend texts (both narratives and expository).

Readers of all ages must be aware of metacognitive reading strategies if they are to be successful in accessing print especially literary texts for easy reading comprehension. Louca (2003) illustrates metacognition as cognition about cognition because it entails examining the brains' processing during the process of thinking. Reading as a cognitive process explains indirectly that metacognition during the process of reading could direct to better comprehension. Then, Iwai (2011) declares that metacognition plays an essential role in reading comprehension since it is related to the development of linguistic, cognitive, and social skills. During reading comprehension, 'the process of metacognition is explained through strategies which have characteristics such as procedural, purposeful, effortful, willful and facilitative' (Alexander & Jetton, 2000, p. 285-310).

Meanwhile, reading comprehension is determined as the grade of analysing a text which comes from the relation between the words that are written and how they trigger knowledge outside the text. It would be difficult to study a foreign language without learning this skill (Jafari & Ketabi, 2012). To implement strategies of metacognitive, readers are classified into two categories; skilled readers and unskilled ones (Pressley & Afflerbach, 1995). Skilled readers apply one or more metacognitive strategies to analyze the texts effectively and to promote their capability in this regard.

Steinbach (2010) investigates the metacognition strategies skills like planning, problem-solving, monitoring effectiveness, self-assessment, self-correction and evaluation with the view of progress. During learning, students have the awareness of using these processes involved in metacognitive strategies. Then, Shah (2012) contended that students in many institutions depend on these strategies to obtain better academic achievement. In addition, Zohar & Dori (2012) described that these strategies will push them in understanding what they understand about social studies, what they should do, what they have studied and whatever they can do to improve on what they have acquired.

Metacognition plays an essential role in students' learning (Pressley, 2002). Graham (1997) explains that metacognitive strategies that make students able to plan, control and examine their learning are more crucial than strategies that increase interaction and input. Metacognitive strategies can construct something more than an inclination towards cooperation, namely self- esteem and self-confidence given by the skill to select and evaluate the strategies of one's learning, moreover the value of each strategy and the independence in studying that keeps up with them (Boghian, 2016).

The implementation of metacognitive approaches, for instance, self-monitoring or awareness helps in improving self-learners who have the capability to plan on their studies for the rest of their learning process. This links to the self-guidance that the process inculcates in the lives of such learners. Through this, metacognition improves and develops learning experiences in the given field of study. Through the improvement of learning experiences, learners are capable of achieving better problem-solving and learning skills.

Metacognitive strategies encourage learners to analyse their development of learning and thus provide good guidance (Herrera, Holmes & Kavimandan, 2011).

Metacognitive experiences are any conscious cognitive or affective experiences that accompany and pertain to any intellectual enterprises. They occur before, during, and after the reading. Garner (1988) describes before-reading knowledge that relates to a personal strength, during-reading information as strategy knowledge and after-reading knowledge as task information. For all of these three experiences, metacognitive knowledge provides a base for metacognitive experiences that are expressed as awareness.

Metacognition in reading can distinguish skilled and unskilled readers. Skilled and unskilled readers are differentiated based on their comprehension ability, which employs their general world knowledge to understand and draw valid inferences from literary texts, and uses their comprehension monitoring to repair strategies (Mokhtari & Reichard, 2002). Therefore, skilled readers are aware of the text they read, know the reason for reading it, and set strategies to handle problems and monitor their comprehension of information. Unskilled readers are limited in their metacognitive knowledge about reading. They focus on reading as a decoding process rather than as construction of meaning. Most importantly, all of the components of metacognition play a role in activating each other to achieve comprehension and influence the learner's performance in using reading skills.

The central role of metacognition and comprehension monitoring in the current descriptions of the reading process is reflected in the steady growth of interest in reading comprehension monitoring research. The value placed by teachers and researchers on this important aspect of reading is supported in the literature that documents the link between comprehension monitoring and academic learning. Paris and Winograd (1990) maintained that metacognition can promote academic learning and motivation. The idea is that students can enhance their learning by becoming aware of their own thinking as they read, write, and solve problems at school. Teachers can promote this awareness by simply informing students about effective problem-solving strategies and discussing cognitive and motivational characteristics of thinking. Paris and Winograd (1990) argued that such "consciousness-raising" has twin benefits: "(a) it transfers responsibility for monitoring learning from teachers to students themselves, and (b) it promotes positive self-perceptions, affect, and motivation among students. In this manner, metacognition provides personal insights into one's own thinking and fosters independent learning".

To assist our understanding of the students' reading problems, it is important to investigate their use of metacognitive reading strategies. By examining the learners' use of metacognitive reading strategies, their reading comprehension can progress because increased use of metacognitive reading strategies can improve comprehension (Zhang, 2008). Vandergrift (2002) believes metacognitive strategies are essential in learning because they oversee, regulate, or direct the language learning task, and involve thinking about the learning process. They also provide awareness to students of their lesson contents and the need to be tactical in monitoring their comprehension.

Research has shown that the higher the students' use of metacognitive strategies, the greater the students' reading ability and proficiency. Many studies (Zhang, 2008 & Vandergrift 2002) have found that generally, more proficient readers exhibit different types of reading behaviours such as overview before reading, employ context clues, look for important details, pay greater attention, attempt to relate important points in the text to holistically understand the text, activate and the use of schema to interpret text, reconsider and revise hypotheses about the meaning of

text on content, attempt to infer information from text, determine the meaning of unfamiliar words, monitor text comprehension, identify or infer main ideas, use strategies to remember text (paraphrasing, repetition, making notes, summarizing, etc.) understand relationships between parts of text, recognize text structure, change reading strategies when comprehension to text turns vague; evaluate the qualities of text, reflect on a process additionally after a part has been read, and anticipate or plan to integrate knowledge gained from reading . This study therefore sought to determine the students' use of metacognitive reading strategies when reading academic materials.

Statement of the Problem

Reading is a basic tool for social interaction and academic achievement. Access to knowledge available in electronic and print modes depends largely on the ability to read and comprehend information. However, many students find it difficult to read, understand and interpret what they read. This has resulted in poor performance in reading comprehension and also in low achievement in different subject areas. To improve students' performance in reading, studies have focused on reading interests of students, methods and strategies of teaching reading, factors of poor reading performance and causes of students' poor reading culture. Besides, studies on the use of metacognitive reading strategies have focused on awareness of reading strategies among undergraduate and secondary school students to enhance students' performance in reading comprehension. However, there are few studies dealing with students' independent reading and comprehension of texts in terms of their capacity to use metacognitive reading strategies in Nigeria secondary schools. This study therefore investigated students' use of metacognitive reading strategies when reading academic materials in selected secondary schools in Ibadan North East Local Government, Oyo State.

Research Questions

The following research questions were answered in the study:

1. How often do S.S.II students use metacognitive reading strategies when reading academic materials?
2. Which group of metacognitive strategies (global, problem-solving and support) do S.S.II students use most when reading academic materials?
3. Which specific metacognitive strategies do students use most?
4. Which specific metacognitive strategies do students use least?

Scope of the Study

This study focused on students' use of metacognitive reading strategies when reading academic materials. It covered S.S.II students in 10 public senior secondary schools from Ibadan North East Local Government Area in Ibadan Metropolis, Oyo State.

Significance of the Study

The study is expected to be of benefit to students, teachers and other stakeholders in the education sector. From the empirical information provided by this study, teachers and educational researchers would become aware of the extent of students' use of metacognitive strategies when reading academic materials. This would enable teachers to identify the students' deficiency in reading comprehension which is as a result of their strengths/weaknesses in the use of metacognitive reading strategies. The study would enable teachers teach students relevant metacognitive reading strategies to enhance their capacity to read and comprehend texts both fiction and expository especially in their various subject areas. This in turn would improve their ability to engage in independent study, improve their performance in the content area reading and hence reduce the failure rate in examinations.

Methodology

This study adopted the survey research design because it was a baseline data which was used to examine the students' use of metacognitive reading strategies when reading academic materials before the intervention. A total of 250 SS II students from 10 senior secondary schools in Ibadan North East Local Government Area, Oyo State participated in the study. The instrument used in this study was adapted from Mokhtari & Reichard (2002) to determine metacognitive awareness and perceived use of reading strategies with reliability co-efficient of 0.89. The instrument was categorised into three broad categories of reading strategy use; that is GLOB strategies (13 items), PROB strategies (8 items), and SUP strategies (9 items). The changes made in the questionnaire were simplifying of concepts and adjusting the statement of the items to suit the learners' age in terms of language. Data collected were analysed using frequency counts, percentage, mean and standard deviation.

Results

Research Question 1: How often do senior secondary II students use metacognitive strategies when reading academic materials?
This research question was answered with the use of descriptive statistics presented on Table 1.

Table 1: Students' use of metacognitive strategies

S/N	Statements	Never	Only Occasionally	Sometimes	Usually	Always	Mean	Std. D
Global								
1.	I have a purpose in mind when reading.	103 41.2%	80 32.0%	32 12.8%	21 8.4%	14 5.6%	2.05	1.18
2.	I think about what I know to help me understand what I read.	37 14.9%	71 28.5%	69 27.7%	59 23.7%	13 5.2%	2.76	1.13
3.	I read fast through the passage to see what it is about before reading it in detail.	30 12.0%	66 26.5%	54 21.7%	75 30.1%	24 9.6%	2.99	1.20
4.	I think about whether the content of what I am reading is related to the purpose of my reading.	33 13.2%	86 34.4%	43 17.2%	69 27.6%	18 7.2%	2.83	1.22
5.	I read very quickly first to find out characteristics of the passage such as the length and its organisation.	20 8.0%	82 32.8%	51 20.4%	74 29.6%	23 9.2%	2.99	1.15
6.	I decide what to read in detail and what to ignore.	21 8.4%	73 29.3%	38 15.3%	83 33.3%	34 13.7%	3.15	1.22
7.	I use tables, figures and pictures in text to increase my understanding.	31 12.4%	104 41.6%	31 12.4%	62 24.8%	22 8.8%	2.76	1.21
8.	I use some words or information in the passage to help me understand better what I am reading.	40 16.0%	94 37.6%	40 16.0%	64 25.6%	12 4.8%	2.66	1.16
9.	I use written signs such as **bold** and *italics* to find important information.	46 18.5%	86 34.7%	24 9.7%	63 25.4%	29 11.7%	2.77	1.33
10.	I try to ask questions about the value of what I have read.	29 11.7%	82 33.2%	45 18.2%	58 23.5%	33 13.4%	2.94	1.25
11.	I check my understanding when I come across difficult information or expression.	31 12.4%	81 32.4%	34 13.6%	81 32.4%	23 9.2%	2.94	1.23
12	I try to guess what the passage is about when I read.	27 10.9%	81 32.7%	46 18.5%	58 23.4%	36 14.5%	2.98	1.26
13.	I check to see if my guesses about the passage are right or wrong.	20 8.0%	94 37.6%	54 21.6%	73 29.2%	9 3.6%	2.83	1.05
Weighted mean = 2.82								
Problem-solving								
14.	I read slowly and carefully to be sure I understand what I am reading.	40 16.0%	74 29.6%	40 16.0%	83 33.2%	13 5.2%	2.82	1.20

15.	I try to get back to what I am reading when I lose concentration or attention.	90 36.0%	67 26.8%	54 21.6%	14 5.6%	25 10.0%	2.32	1.48
16.	I change my reading speed according to the difficulty level of what I am reading.	40 16.0%	84 33.6%	63 25.2%	45 18.0%	18 7.2%	2.67	1.56
17.	When the reading passage becomes difficult, I pay more attention to what I am reading.	32 12.8%	69 27.6%	41 16.4%	73 29.2%	35 14.0%	3.04	1.28
18.	I stop from time to time and think about what I am reading.	34 13.7%	63 25.4%	51 20.6%	76 30.6%	24 9.7%	2.97	1.23
19.	I try to form a picture of what I am reading in my mind to help me remember what I read.	27 10.8%	93 37.2%	39 15.6%	71 28.4%	20 8.0%	2.86	1.18
20.	When the passage become difficult, I reread to increase my understanding.	36 14.5%	84 33.7%	42 16.95	61 24.5%	26 10.4%	2.83	1.25
21.	I try to guess the meaning of unknown words or phrases in the passage.	29 11.6%	71 28.4%	70 28.0%	50 20.0%	30 12.0%	2.92	1.20
Weighted mean = 2.80								
Support								
22.	I take notes while reading to help me understand what I read.	20 8.1%	65 26.2%	101 40.75	41 16.5%	21 8.5%	2.91	1.04
23.	When what I am reading becomes difficult, I read aloud to help me understand what I read.	36 14.5%	81 32.5%	42 16.9%	57 22.9%	33 13.3%	2.88	1.29
24.	I summarise what I read to help me remember important things I have read.	36 14.5%	78 31.5%	40 16.1%	73 29.4%	21 8.5%	2.86	1.23
25.	I discuss what I read with others to check my understanding.	31 12.4%	83 33.2%	48 19.2%	68 27.2%	20 8.0%	2.85	1.19
26.	I underline or circle information in the text to help me remember it.	24 9.6%	56 22.4%	88 35.45	59 23.6%	23 9.2%	3.00	1.10
27.	I use a dictionary to help me understand what I read.	28 11.5%	93 38.1%	45 17.6%	56 23.0%	24 9.8%	2.93	2.22
28.	I restate ideas in my own words to understand better what I read.	48 193%	61 24.5%	41 16.5%	76 30.5%	22 8.8%	2.93	1.77
29.	When I do not understand, I read again to find out relationships among ideas.	37 14.85	75 30.05	37 14.85	77 30.8%	24 9.6%	2.90	1.26
30.	I ask myself questions I like to be answered in the text.	25 10.0%	72 28.8%	60 24.0%	69 27.6%	24 9.6%	2.98	1.16
Weighted Mean = 2.92								
Grand Weighted Mean = 2.85								

Table 1 shows the grand weighted mean of 2.85 out of the 5.00 maximum obtainable score, which is less than the standard mean of 3.00. This means that the senior secondary school two (II) students sometimes use metacognitive reading strategies when reading academic materials.

Research Question 2: Which group of metacognitive reading strategies (global, problem-solving and support) do SS II students use most when reading academic materials?

Table 1 reveals that SS II students use support reading strategy most with a weighted mean average of 2.92 followed by global strategy (2.82) and least problem solving (2.80) against the threshold mean of 2.85.

Research Question 3: Which metacognitive reading strategies do SS II students use most when reading academic materials?

Table 1 indicates that SS II students use the following 19 metacognitive reading strategies most when reading academic materials: (in descending order of magnitude) I decide what to read in detail and what to ignore (3.15>2.85), when the reading passage becomes difficult, I pay more attention to what I am reading (3.04>2.85), I underline or circle information in the text to help me remember it (3.00>2.85), I read very quickly first to find out characteristics of the passage such as the length and its organisation (2.99>2.85), I read fast through the passage to see what it is about

before reading it in detail (2.99>2.85), I ask myself questions I like to be answered in the text (2.98>2.85), I stop from time to time and think about what I am reading (2.97>2.85), I check my understanding when I come across difficult information or expression (2.94>2.85), I try to ask questions about the value of what I have read (2.94>2.85), I restate ideas in my own words to understand better what I read (2.93>2.85), I use a dictionary to help me understand what I read (2.93>2.85), I try to guess the meaning of unknown words or phrases in the passage (2.92>2.85), I take notes, while reading to help me understand what I read (2.91>2.85), When I do not understand, I read again to find out relationships among ideas (2.90>2.85), When what I am reading becomes difficult, I read aloud to help me understand what I read (2.88>2.85), I try to form a picture of what I am reading in my mind to help me remember what I read (2.86>2.85), I summarise what I read to help me remember important things I have read (2.86>2.85), lastly, I discuss what I read with others to check my understanding (2.85=2.85).

Research Question 4: Which metacognitive reading strategies do SS II students use least when reading academic materials?

Table 1 shows that students use the following metacognitive strategies least when reading academic materials. I have a purpose in mind when read (2.05<2.85), I try to get back to what I am reading when I lose concentration or attention (2.32<2.85), I use some words or information in the passage to help me to understand better what I am reading (2.66<2.85), I change my reading speed according to the difficulty level of what I am reading (2.67>2.85), I use tables, figures and pictures in text to increase my understanding (2.76<2.85), I think about what I know to help me understand what to read (2.76<2.85), I use written signs such as boldface and italics to find important information (2.77<2.85).

Discussion of Findings

The metacognitive reading strategies S.S.II students use often when reading academic materials

Findings revealed that the grand weighted mean is 2.85 out of the 5.00 maximum obtainable score, which is less than the standard mean of 3.00. This suggests that the senior secondary school 2 students sometimes use metacognitive reading strategies when reading academic materials. The prevailing method of teaching reading in many Nigerian secondary schools may be the reason why students do not always use the strategies. Teachers mostly test students' knowledge of reading rather than teach them how to read. Students are not taught reading strategies and as such they are not aware of them, not to talk of using them. This supports Sheorey & Mokhtari (2001) observation that both native and non-native students with high reading ability used more strategies than students with low reading ability in the two groups. Sheorey & Mokhtari (2001) further confirmed that skilled readers use more strategies than less skilled readers as a result of their high metacognitive awareness of the variety of reading strategies. Yüksel & Yüksel (2012) further asset that the learners frequently employed academic reading strategies because metacognition in reading can distinguish skilled and unskilled readers. Skilled and unskilled readers are differentiated based on their comprehension ability, which employs their general world knowledge to understand and draw valid inferences from literary texts, and uses their comprehension monitoring to repair strategies (Mokhtari & Reichard, 2002). Therefore, skilled readers are aware of the text they read, know the reason for reading it, and set strategies to handle problems and monitor their comprehension of information. Unskilled readers are limited in their metacognitive knowledge about reading. They focus on reading as a decoding process rather than as construction of meaning. Most importantly, all of the components of metacognition play a role

in activating each other to achieve comprehension and influence the learner's performance in using reading skills. Teachers therefore, must adjust their teaching in order to teach the students' metacognitive reading strategies in order to enhance their reading comprehension. This is because, trying to read from a book without following a particular strategy might prevent the students' to comprehend what is being read. Hence, students will probably understand what they read if metacognitive reading strategies are applied during the reading process.

The group of metacognitive reading strategies S.S.II students use most when reading academic materials

Findings further show that Support Reading Strategy (2.92) is ranked above the grand weighted mean score. This implies that Support Reading Strategy is the most used metacognitive strategy when students are reading academic materials. These strategies represent what teachers usually ask their students to do during reading lessons. They are less sophisticated and can easily be applied through trial and error method being taught. This corroborated Yau (2009) that metacognitive and cognitive strategies were used more frequently for first-language reading, and support strategies were more often used for second-language reading. The findings further negate Yüksel & Yüksel (2012) that the most metacognitive reading strategies used and students were aware of are PROB strategies, but the SUP strategies were the least preferred one in academic reading. It also negates Alhaqbani & Riazi (2012) that found that problem-solving reading strategies were more useful than global and support strategies for students studying Arabic as a second language. Shikano (2013) also revealed that the participants were inclined to employ PROB strategies more frequently than GLOB and SUP strategies. This difference in the study could be as a result of interaction between the academic material and the reader and the reading skill of the student, the language used in writing the academic material could be difficult for the students to comprehend as a second language learner. The learners' cultural background and prior cultural experience is also crucial in comprehension of the academic material.

The specific metacognitive reading strategies S.S.II students use most when reading academic materials

Findings revealed that nineteen (19) strategies out of 30 metacognitive reading strategies were mostly used by students when reading academic materials and this supported Oxford and Crookall (1989) that SL/FL learners utilised reading strategies in fostering more efficient and effective language learning. Therefore, it is imperative, that instructional strategies should include scaffolding by teachers and opportunities for students to practice and apply strategies (Palinscar & Brown, 1984; Rosenshine et al., 1996) so that "readers eventually become adept at using their prior knowledge as they read to make predictions about what might happen next and to understand ideas as they encounter them" (Paris, Wasik, & Turner, 1991). Metacognitive strategies particularly manage pre-evaluation and pre-organization; on-line organization and assessment; post-assessment of language learning actions and language use outcome (Cohen, 1998). These strategies enable learners to manipulate their own cognition by organising, planning, and evaluating the learning process. Thus, L2 learners, who possess metacognitive awareness, are able to plan for effective learning, organise them to employ specific strategies, know how to check the use of strategies, learn how to combine different strategies, and evaluate the effectiveness of strategy use (Anderson, 2015). This is supported by Batang (2015) that those who apply metacognitive reading strategies in reading had higher comprehension level in reading.

Conclusion

This study investigated the students' use of metacognitive reading strategies when reading academic materials. From the results, it could be concluded that students do not have sufficient knowledge of metacognitive reading strategies and hence, they use them sparingly in their reading of academic materials. This is likely because teachers do not explicitly teach these strategies to students during reading comprehension lessons.

Recommendations

Based on the findings, the following recommendations are made**:**

1. Teachers should deliberately teach metacognitive reading strategies in their reading comprehension lessons.
2. Teachers should teach students when and why they should use the metacognitive reading strategies during their reading.
3. Students should adopt the metacognitive reading strategies in their reading of academic materials.

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Cautionary Lessons from the Gambia: Balancing Criticism and Support in AI-Driven Language Education

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Abstract

This study explores techniques for balancing criticism and support in student feedback within The Gambian educational context, while linking these insights to the emerging use of Artificial Intelligence (AI) in language education. Using a mixed-methods approach with 650 students and 50 educators, the study found that feedback is often vague, overly critical, or culturally insensitive, leading to reduced student motivation. While AI tools promise scalable, timely, and individualised feedback, their uncritical use raises risks of depersonalised, culturally inappropriate, and criticism-heavy responses. The study explored how Gambian educators deliver negative feedback, how students perceive its clarity and usefulness, and what lessons can be drawn for the cautious integration of artificial intelligence in feedback processes within 21st-century language education. The study concludes that AI integration must be teacher-guided, culturally responsive, and carefully regulated to ensure feedback enhances, rather than undermines student learning. The study calls for a ***holistic feedback model*** *that unites pedagogical clarity, cultural empathy, and technological innovation through deliberate teacher training, supportive institutional policies, and ethically guided AI integration.*

Keywords: Feedback, Student Motivation, Culturally Responsive Teaching, Educational Challenges, Formative Assessment

Introduction

Feedback is a cornerstone of effective teaching and learning, enabling students to recognize strengths, identify areas for improvement, and sustain motivation. In Gambian classrooms, however, the provision of effective feedback is constrained by structural factors such as large class sizes, limited instructional time, and inadequate resources. Cultural norms that prioritize respect and social harmony further discourage direct criticism, leading many teachers to prioritise encouragement over constructive critique.

The rise of Artificial Intelligence (AI) in education introduces new possibilities for feedback delivery, especially in language learning. Automated tools promise instant responses, personalised guidance, and relief for overburdened teachers. Yet, feedback is not only cognitive but also relational and cultural. If AI is deployed uncritically, it risks replicating the same problems identified in Gambian classrooms: vague, impersonal, and criticism-heavy communication that discourages rather than empowers learners. This study therefore situates Gambian feedback practices within the global debate on AI in language education, emphasising the need for cautious, culturally grounded adoption.

Effective feedback is a cornerstone of the learning process, providing students with the information and guidance necessary to improve their academic performance. When done well, feedback can help students understand their strengths, identify areas for improvement, and motivate them to engage more deeply with the learning material (Brookhart, 2017). However, delivering negative feedback - criticism of student work - requires particular care to ensure that it is both constructive and supportive. If feedback is too harsh, it may discourage students or diminish their confidence, whereas feedback that is overly lenient may fail to communicate the necessary

areas for improvement (Hattie & Timperley, 2007).

In educational systems where resources and teacher training opportunities are limited, such as in The Gambia, providing effective feedback can present additional challenges. Many Gambian classrooms face large class sizes, limited instructional time, and constrained access to learning materials, which can affect the ability of educators to offer personalized, constructive feedback. Furthermore, cultural and social factors also play a role in how feedback is perceived and delivered. Educators may prioritise maintaining student self-esteem and relationships, sometimes avoiding negative comments, which can limit opportunities for genuine improvement (Carless, 2006).

This study explored how educators in The Gambia manage the balance between providing necessary criticism while maintaining a supportive and motivating tone. The research investigated the perceptions of both students and educators on the quality and impact of feedback. It also examined the effectiveness of current feedback practices, focusing on how negative feedback is delivered and received in various academic contexts.

Feedback is widely acknowledged as one of the strongest influences on student achievement (Hattie & Timperley, 2007). In The Gambia, however, the delivery of feedback is shaped by systemic challenges - overcrowded classrooms, limited resources, and insufficient teacher training. Teachers often struggle to strike a balance between providing necessary critique and maintaining student morale, resulting in feedback that is either vague or overly critical.

At the same time, AI tools such as automated essay scoring and grammar checkers are reshaping feedback delivery globally. For contexts like The Gambia, AI offers the potential to address resource gaps by providing scalable, timely, and individualized feedback. However, feedback is inherently relational and emotional. Cultural norms in Gambian classrooms emphasize respect and indirectness, values that may not be easily replicated in AI systems developed in Western contexts. Without caution, AI integration could unintentionally amplify existing weaknesses in feedback practices rather than resolve them.

Feedback is most effective when it is clear, specific, and actionable. Hattie and Timperley (2007) argue that effective feedback answers three questions: *Where am I going? How am I going? Where to next?* Similarly, Shute (2008, 2019) emphasizes that formative feedback enhances student learning by enabling real-time adjustments. However, feedback that is delayed, vague, or overly critical undermines self-confidence and engagement (Lipnevich & Smith, 2009).

In Africa, and particularly in The Gambia, feedback is constrained by structural realities. Teachers often face overcrowded classrooms, scarce teaching materials, and limited professional development opportunities (World Bank, 2022; UNESCO IICBA, 2023). Bah and Jallow (2020, 2021) show that cultural expectations of respect and harmony often lead to feedback that prioritizes encouragement over critique, sometimes at the expense of academic improvement. Feedback practices are deeply shaped by cultural contexts. Sesay (2021, 2023) highlights that Gambian teachers often avoid harsh criticism to preserve relationships and student dignity. Fataar (2018) similarly notes that in African contexts, culturally insensitive feedback undermines student engagement. Akyeampong et al. (2020) argue that innovations in education, including AI, must be adapted to local realities rather than imported wholesale.

AI tools such as intelligent tutoring systems and automated writing evaluators offer opportunities for scalable and personalized feedback (Hattie & Gan, 2018; Carless, 2019). However, Winstone and Carless (2020) caution that feedback is not just technical but also emotional and relational, qualities AI lacks. Lipnevich and Smith (2019) further warn that

AI feedback systems often emphasize errors over encouragement, risking demotivation.

Digital divides persist across Africa. Jobe and Sanyang (2022, 2023) show that rural Gambian schools face greater infrastructural and technological challenges than urban ones. Global Partnership for Education (2023) emphasizes that introducing AI without addressing equity risks deepening educational inequalities.

Scholars emphasise that effective feedback develops learner agency and reflection (Nicol & Macfarlane-Dick, 2006, 2019). Gay (2018) stresses the importance of culturally responsive pedagogy, while Hendry, Bromberger, and Armstrong (2018) highlight the value of peer and self-assessment. These findings collectively suggest that AI should complement—not replace—human judgment and relationships in language education.

Research consistently shows that feedback is one of the most powerful influences on student achievement, but not all feedback is equally effective (Hattie & Gan, 2011). Feedback that is timely, specific, and actionable tends to be more effective in promoting learning. In contrast, vague, delayed, or overly critical feedback can harm student motivation and self-efficacy, leading to disengagement from learning tasks (Lipnevich & Smith, 2009). This is particularly concerning in contexts where students already face challenges such as limited resources, overcrowded classrooms, and low teacher-to-student ratios.

In The Gambia, where educational institutions are working to improve the quality of instruction and student outcomes, effective feedback practices are crucial. The government and non-governmental organisations have made efforts to enhance teacher training, but gaps remain in how to deliver feedback that is both critical and supportive. Negative feedback, when delivered without care, can undermine student confidence, particularly in contexts where students may be more vulnerable to discouragement due to socio-economic or educational challenges.

In many Gambian schools, teachers may struggle to provide individualised feedback due to large class sizes and limited resources (World Bank, 2018). While teachers are trained to assess student performance, many lack the necessary tools and time to offer detailed, personalised feedback. Instead, feedback may often be generic, focusing on broad performance areas without addressing specific student needs. This can create a gap between what the students need in terms of feedback and what they receive, leading to frustration and misunderstanding.

Additionally, feedback delivery in The Gambia is often influenced by cultural norms. In some cases, educators may hesitate to provide direct criticism to avoid damaging student-teacher relationships or to prevent students from feeling demoralised (Gipps & Tunstall, 1998). This can result in feedback that is overly supportive but lacks the critical edge necessary for students to improve. However, there is a growing recognition among educators that balancing criticism with support is essential for helping students make meaningful progress in their learning. Feedback has long been recognised as one of the most powerful influences on student learning and achievement. Hattie & Timperley (2007) found that effective feedback can help students understand their learning progress, clarify expectations, and identify the steps needed for improvement. The effectiveness of feedback, however, depends on several factors, including its timing, specificity, and relevance (Shute, 2008).

In their meta-analysis, Hattie and Timperley emphasised that feedback is most effective when it helps students answer three key questions: Feedback that addresses these questions can guide students through their learning journey, making it more targeted and actionable (Hattie & Timperley, 2007). However, the potential for feedback to be

counterproductive also exists if it is overly critical or lacks sufficient detail.

There are several types of feedback that educators provide, including directive, evaluative, and facilitative feedback. Directive feedback tells students what to do, evaluative feedback provides judgments, and facilitative feedback encourages students to reflect on their work and self-assess their learning (Nicol & Macfarlane-Dick, 2006). While each type has its place, facilitative feedback has been shown to be more effective in promoting deep learning because it fosters student engagement and self-regulation (Black & Wiliam, 1998).

The *type* of feedback; its tone, purpose, and structure, significantly influences how students interpret and respond to it. In educational discourse, three main forms of feedback are often distinguished: **directive**, **evaluative**, and **facilitative** feedback. Each has distinct functions, benefits, and implications for student motivation and learning. Directive feedback refers to feedback that tells learners exactly what to do in order to correct errors or improve performance. It is explicit, prescriptive, and task-focused, guiding students toward a specific course of action. For instance, a teacher might say, *"You should begin your essay with a thesis statement that clearly expresses your argument,"* or *"Replace this sentence with a clearer example to support your point."*

According to Hyland and Hyland (2019), directive feedback is particularly effective for novice learners who may lack the linguistic or conceptual tools to self-correct. It reduces ambiguity by providing concrete steps for improvement, making it suitable for skill-based subjects such as language writing, mathematics, and technical disciplines. However, if overused, directive feedback can create student dependency and limit opportunities for critical thinking or self-regulation (Lee, 2021).

In the Gambian educational context, where classrooms often operate under tight schedules and large student populations, directive feedback is a practical approach that enables teachers to communicate efficiently and ensure clarity. Yet, as Boud and Molloy (2019) emphasize, its effectiveness depends on how it is framed: if presented harshly or without explanation, it may be perceived as criticism rather than support.

Evaluative feedback involves judgments about the quality, correctness, or adequacy of a student's work, typically expressed through grades, ratings, or comments such as *"Excellent," "Needs improvement,"* or *"Weak argument."* This form of feedback is often summative, providing learners with a sense of where they stand relative to a standard or expectation.

Brookhart (2017) notes that evaluative feedback helps students recognize performance levels and benchmarks, making it an essential part of accountability and assessment. However, it does not always provide the guidance necessary for improvement. When evaluative feedback focuses solely on judgment without accompanying explanations, it can demotivate learners - especially in environments where teacher authority is strong and student confidence is fragile (Carless & Boud, 2018).

In contexts like The Gambia, where respect for authority and hierarchical classroom dynamics are deeply ingrained, evaluative feedback must be delivered sensitively to avoid discouraging students. Combining evaluative comments with formative guidance - such as explaining *why* a performance was rated a certain way - can transform this feedback from a static judgment into a constructive learning tool (Winstone & Carless, 2020).

Facilitative feedback, by contrast, encourages learners to reflect, self-assess, and engage in problem-solving rather than simply following directives. It invites students into a dialogue about their learning by asking questions, offering suggestions, or prompting deeper thinking - for example: *"How might you support this argument with stronger evidence?"* or *"What alternative approach*

could strengthen your conclusion?" According to Nicol and Macfarlane-Dick (2021), facilitative feedback promotes self-regulated learning and critical reflection by encouraging students to take ownership of their progress. It emphasises partnership and interaction between teacher and student rather than one-way communication. This form of feedback aligns with contemporary constructivist and learner-centered pedagogies, which view learning as a collaborative and reflective process.

In the Gambian classroom, facilitative feedback is particularly valuable in promoting student engagement and autonomy, especially as educational reforms increasingly emphasise active learning and critical thinking. However, its success depends on teachers' training and willingness to foster open dialogue—skills that may require professional development support (Tunku et al., 2022).Effective feedback practice often involves integrating directive, evaluative, and facilitative elements in complementary ways. For instance, a teacher might begin with a facilitative question to encourage reflection, follow up with directive guidance for clarity, and conclude with an evaluative summary that acknowledges effort or achievement. When combined skilfully, these forms of feedback create a balanced approach that supports cognitive growth and emotional well-being.

As Ferguson (2021) asserts, feedback is most powerful when it is both *instructional* and *motivational.* In The Gambia's education system, where students' confidence and persistence are vital to academic success, balancing these three feedback approaches can transform the classroom into a space where critique fosters growth rather than discouragement.

Feedback can also be formative or summative. Formative feedback occurs during the learning process and aims to help students improve before final assessments, while summative feedback is provided at the end of a learning period to evaluate overall performance. Formative feedback, when done well, has a greater potential to improve learning because it allows students to adjust and refine their understanding while they are still engaged in the learning process (Wiliam, 2011).

Delivering negative feedback is particularly challenging because it requires striking a balance between providing honest criticism and maintaining a supportive tone (Carless, 2006). Negative feedback can be difficult for students to accept, particularly if it is perceived as harsh or unfair. Students may become defensive or demotivated, which can lead to disengagement from the learning process (Lipnevich and Smith, 2009).

Effective negative feedback should focus on specific aspects of student work, provide clear suggestions for improvement, and be delivered in a way that encourages students to see feedback as an opportunity for growth rather than a judgment of their abilities (Brookhart, 2017). Research shows that feedback is more likely to be accepted and acted upon if it is delivered in a constructive and respectful manner (Gipps & Tunstall, 1998).

In The Gambia, as in many other African countries, feedback practices are often shaped by cultural and social norms (Fataar, 2010). Gambian society places a high value on respect and maintaining harmonious relationships, which can influence how teachers provide feedback. Educators may avoid giving direct criticism to prevent damaging relationships with students, especially in settings where respect for authority is culturally ingrained (Akyeampong, Pryor, & Ampiah, 2006).

In addition, resource constraints in Gambian schools, such as large class sizes and limited instructional time, can make it difficult for teachers to provide personalised feedback. As a result, feedback may be more generic and less targeted to individual student needs (World Bank, 2018). These challenges underscore the importance of exploring feedback practices in

the Gambian context to identify strategies that can improve the effectiveness of feedback delivery. While there is a wealth of research on the importance and effectiveness of feedback in educational settings, there is a lack of research that specifically focuses on feedback practices in under-resourced contexts like The Gambia. Most studies on feedback have been conducted in Western or well-resourced settings, where class sizes are smaller, and teachers have more time and resources to devote to providing detailed, personalized feedback (Brookhart, 2017).

This study seeks to address this gap by exploring how educators in The Gambia balance the need for constructive criticism with the cultural and resource-related challenges they face in delivering feedback. By focusing on the perceptions of both students and educators, this research aims to provide insights that can inform feedback practices not only in The Gambia but also in other similar educational contexts.

In the Gambian classroom setting, where traditional authority and structure often define teacher–student interactions, this approach remains particularly relevant. Effective educators use constructive criticism not merely to punish errors but to **guide learners toward correct performance through consistent reinforcement**. However, when negative feedback is overly punitive or lacks balance, it risks producing anxiety or disengagement. Therefore, the study adopts the behaviorist perspective as a foundation for understanding **how feedback can modify behaviour while maintaining motivation** when applied with care and support.

Vygotsky's concept of the **Zone of Proximal Development (ZPD)** is particularly relevant here: it suggests that learners progress most effectively when feedback and support are provided just beyond their current level of competence, enabling guided improvement. In Gambian classrooms, facilitative feedback encourages collaborative learning, allowing students to engage critically with teacher comments, seek clarification, and apply corrections independently. Such dialogic interaction fosters **cognitive growth, autonomy, and self-regulation**, complementing traditional instructional approaches.

The **Feedback Intervention Theory**, developed by **Kluger and DeNisi (1996)**, provides a psychological framework for understanding how individuals respond to performance feedback. FIT posits that feedback influences learning depending on the level of attention it directs—whether toward the **task**, the **process**, or the **self**. When feedback focuses on the task (specific errors or performance gaps), it tends to enhance learning outcomes. However, when it targets the self (e.g., through personal criticism), it can provoke defensiveness and reduce motivation.

This theory is highly applicable to the present study, which investigates how Gambian educators balance criticism and support. Feedback that combines **evaluative clarity with supportive tone**—for instance, highlighting specific areas of improvement while affirming students' potential—keeps learners' attention on performance improvement rather than personal inadequacy. FIT thus provides a useful lens for understanding why **the form, tone, and focus of feedback** critically determine whether it fosters growth or discouragement. Integrating these theories allows for a comprehensive interpretation of feedback practices in Gambian education. **Behaviorism** explains the corrective and performance-oriented aspects of directive feedback, **constructivism** emphasizes learner agency and dialogic interaction, and **Feedback Intervention Theory** provides insight into psychological responses to feedback. Together, they form a balanced theoretical foundation that supports the study's central aim—to identify **effective techniques for delivering negative feedback that promote learning while preserving motivation and self-worth**.

In practice, this integrated framework

highlights the need for **feedback that is directive in clarity, evaluative in focus, and facilitative in delivery**. It also situates the study within a **context-sensitive pedagogical paradigm**, recognizing the cultural dimensions of feedback in Gambian classrooms, where respect, community values, and teacher authority shape communication dynamics.

In summary, the theoretical framework underscores that effective feedback is both a **psychological process** and a **pedagogical strategy**. By combining insights from behaviorism, constructivism, and feedback intervention theory, this study provides a robust foundation for understanding how educators in The Gambia can deliver negative feedback that informs, motivates, and empowers students.

The conceptual framework of this study synthesizes insights from behaviorist, constructivist, and feedback intervention theories to explain the processes through which feedback—particularly negative or corrective feedback—affects student motivation, learning outcomes, and perceptions. It establishes the **conceptual link between how feedback is delivered (educators' strategies)**, **how it is received and interpreted (students' perceptions)**, and **how these interactions shape overall educational effectiveness** in Gambian classrooms.

The framework revolves around three interrelated constructs:

1. **Feedback Delivery (Educator Behaviour)** – the approach, tone, and technique used by educators when providing feedback, including directive, evaluative, and facilitative methods.
2. **Feedback Reception (Student Perception)** – how students interpret the clarity, fairness, and emotional tone of feedback, and how this influences their motivation and engagement.
3. **Learning Outcomes and Motivation** – the resultant effects of feedback on students' academic performance, confidence, and willingness to improve.

These constructs are influenced by **contextual variables**, such as institutional type (public or private), class size, resource availability, teacher training, and cultural norms governing teacher–student communication.

From a **behaviorist perspective**, feedback delivery acts as a stimulus intended to modify learner behaviour - particularly error correction and performance improvement. Directive and evaluative feedback fall within this category, as they focus on identifying and correcting mistakes through clear reinforcement mechanisms.

From a **constructivist and socio-cultural perspective**, feedback is a dialogic process that supports knowledge construction within the learner's social and cultural context. Facilitative feedback fits this model, as it encourages reflection, discussion, and learner autonomy. In Gambian classrooms - where communal learning, respect for authority, and teacher-led guidance coexist - facilitative feedback strengthens engagement and mutual understanding.

The **Feedback Intervention Theory (Kluger & DeNisi, 1996)** provides an integrative layer, suggesting that the impact of feedback depends on where it directs students' attention. Effective feedback keeps focus on **task and process** rather than on **personal evaluation**, thus fostering constructive self-regulation. This theory explains why balanced feedback—combining directive clarity, evaluative precision, and facilitative tone—is most effective for sustained learning.

The framework also acknowledges that **cultural norms** and **emerging technological influences** mediate feedback processes in Gambian education. Cultural expectations about respect, teacher authority, and collective identity affect how feedback is delivered and received. Meanwhile, the growing introduction of **AI-based feedback**

tools presents new opportunities and challenges: AI systems may enhance efficiency and objectivity but often lack the human sensitivity needed for facilitative interaction. Thus, this framework positions AI not as a replacement for human educators but as a **supportive mechanism** that can enhance consistency while teachers maintain emotional and contextual depth.

In conceptual terms, the model illustrates a **feedback loop** where educators' feedback delivery methods influence students' perceptions and emotional responses, which in turn affect their motivation, engagement, and academic performance. Positive perceptions of feedback—especially when it is supportive and culturally attuned—encourage active learning and self-improvement. Conversely, poorly framed or overly critical feedback can diminish motivation and hinder performance. The model also accommodates feedback from AI tools as a moderating variable that affects both delivery and perception, depending on how technology is integrated and mediated by teachers.

In summary, this conceptual framework demonstrates that **effective feedback is not a single act, but an interactive process** shaped by pedagogy, psychology, culture, and technology. It links educator practices to student outcomes through the mediating influence of perception and motivation. By aligning with the theoretical insights of behaviorism, constructivism, and feedback intervention theory, the framework provides a coherent structure for analysing how Gambian educators can balance criticism and support in their feedback practices - while cautiously exploring the role of AI in enhancing the process.

Statement of the study

This study investigated how educators in The Gambia balance criticism and support when delivering negative feedback to students. It seeks to understand the techniques that teachers use to ensure that feedback serves as a tool for improvement rather than a source of discouragement. The study recognises that while feedback is central to the learning process, its effectiveness depends greatly on the way it is communicated and perceived. In Gambian classrooms - where cultural respect for authority and emotional sensitivity coexist - teachers often struggle to maintain this balance, risking either excessive harshness or insufficient correction. The research therefore examined both educators' and students' perceptions of feedback practices to determine how tone, timing, and delivery influence student motivation, confidence, and academic performance. By focusing on real classroom contexts across various educational levels, the study explores whether current feedback approaches encourage reflective learning and self-improvement, or whether they unintentionally hinder students' willingness to engage. Furthermore, the study seeks to identify contextually appropriate methods for providing feedback that align with Gambian cultural and educational realities. The findings are expected to contribute to a deeper understanding of feedback dynamics within African learning environments and to propose actionable strategies for educators seeking to combine constructive criticism with empathy, encouragement, and respect.

Research Questions:

1. How do Gambian educators deliver negative feedback, and what strategies balance criticism and support in language education?
2. How do students perceive feedback clarity, tone, and usefulness in light of both human and potential AI-driven approaches?
3. What lessons can be drawn for the cautious integration of AI in feedback processes within 21st-century language education?

The findings from this study will contribute to a deeper understanding of how feedback can be optimised to support student learning, with practical recommendations for

educators in The Gambia and other similar educational contexts.

Scope of the Study

This study is delimited to educational institutions within The Gambia, encompassing both urban and rural settings to capture a representative range of teaching and learning environments. The research includes public and private secondary and tertiary institutions, reflecting the diversity of instructional contexts across the country. By focusing on both language and communication-based subjects, the study examines how educators deliver and students receive feedback, particularly negative or corrective feedback, within formal classroom settings.

The investigation concentrates on feedback practices in both formative and summative assessments, with specific attention to how criticism is balanced with encouragement and support. It explores the techniques educators use to provide constructive feedback, the cultural and contextual factors that influence communication styles, and the perceptions of students regarding clarity, tone, and usefulness of feedback. While the study recognizes the growing relevance of artificial intelligence (AI) in educational assessment, it primarily focuses on human-centered feedback, using AI only as a point of comparison to understand future implications for language education.

Geographically, the study limits itself to selected schools and colleges across major regions of The Gambia to ensure a manageable yet representative sample. Thematically, it addresses issues such as feedback effectiveness, motivational impact, cultural sensitivity, and teacher preparedness, while acknowledging contextual challenges such as large class sizes, limited instructional resources, and uneven access to technology.

Methodologically, the scope is confined to descriptive and analytical exploration using both educator and student perspectives. It does not seek to measure long-term achievement outcomes but rather to understand current practices, perceptions, and implications for pedagogical improvement. Thus, the study's boundaries are set to ensure depth of analysis, cultural relevance, and practical applicability of the findings within the Gambian educational landscape.

Significance of the Study

This study holds significant theoretical, practical, and policy value. At the **theoretical level**, it expands the discourse on feedback and pedagogy by situating it within the Gambian educational context, where cultural norms and teacher-student power relations shape communication styles. The study contributes new insights into how feedback can be both directive and supportive, offering a culturally grounded understanding that complements existing Western and global perspectives. At the **practical level**, the research offers tangible benefits to teachers, students, and educational institutions. By identifying effective feedback techniques that balance correction with motivation, it equips educators with tools to enhance classroom interaction, promote positive learning experiences, and build students' confidence. The outcomes will be particularly useful for teacher training programs, where feedback literacy and communication competence are essential professional skills. At the **policy level**, the study provides evidence-based recommendations for improving teacher evaluation systems, professional development initiatives, and assessment standards in The Gambia. The insights generated can inform the Ministry of Basic and Secondary Education (MoBSE) and higher education institutions in designing national frameworks that prioritise constructive, learner-centered feedback. Ultimately, this study is significant because it redefines feedback as a relationship-based pedagogical process—one that, when effectively balanced between criticism and support, can nurture resilience, motivation, and lifelong learning among Gambian students.

Methodology

This study employed the mixed-methods approach, integrating surveys and interviews to capture both quantitative trends and qualitative insights. A total of 650 students and 50 educators from urban and rural schools participated. Surveys measured perceptions of feedback clarity, tone, personalisation, and motivational impact, while semi-structured interviews explored cultural influences, emotional responses, and perspectives on digital or AI-based feedback tools.

Quantitative data were analysed using descriptive and inferential statistics, while qualitative data were coded thematically to identify emerging patterns. This approach provided a comprehensive understanding of both current feedback practices and the potential implications of integrating AI into Gambian classrooms.

Surveys: A structured survey using a 5-point Likert scale (ranging from "strongly disagree" to "strongly agree") was designed to assess the clarity, tone, and motivational impact of feedback from the perspectives of both students and educators. The survey included 25 items divided into the following categories:

a. Clarity and Specificity of Feedback
b. Tone and Respectfulness
c. Motivational Impact of Feedback
d. Personalisation of Feedback
e. Feedback Follow-up

Interviews: Semi-structured interviews were conducted with 20 educators and 40 students to gain deeper insights into their experiences and perceptions of feedback. Interview questions focused on:

1. Specific examples of feedback that were perceived as particularly helpful or unhelpful.
2. The role of cultural and social factors in feedback delivery.
3. Educators' strategies for balancing criticism and support.
4. Students' emotional reactions to receiving negative feedback.

The survey data were analysed using descriptive and inferential statistics. Means, standard deviations, and frequencies were calculated for each survey item. A t-test was conducted to compare students' and educators' perceptions of feedback, particularly regarding clarity and motivational impact. The results were considered statistically significant at $p < 0.05$ (Field, 2013).

The interview data were transcribed and thematically analysed using coding methods to identify key themes related to feedback practices. A deductive coding approach was employed to identify themes related to feedback clarity, emotional reactions, and cultural factors, which had been pre-identified based on the literature (Braun & Clarke, 2006). An inductive approach was also used to capture any emergent themes specific to the Gambian context, particularly those relating to resource constraints and large class sizes. These themes were then cross-referenced with the quantitative data to triangulate the findings.

Results

The results of this study shed light on the perceptions of both students and educators regarding the delivery of negative feedback. The findings suggest that while feedback is generally recognised as important for learning, there are significant challenges in delivering it effectively, particularly in terms of maintaining student motivation and addressing cultural factors.

Table 1: Likert Scale Responses (Mean Scores)

Aspect	Students (Mean Score)	Educators (Mean Score)
Clarity and Specificity		
Feedback is clear and easy to understand	4.1	4.2
Feedback includes specific examples	3.9	4.0
Comments guide the revision process	4.0	4.1
Tone and Supportiveness		
Tone is respectful and constructive	4.2	4.3
Feedback is intended to help improve	4.1	4.2
Feedback encourages necessary changes	4.0	4.1
Impact on Motivation		
Feedback motivates me to improve	3.9	4.1
Feedback boosts my confidence	3.8	4.0
Feedback helps enhance my performance	4.0	4.1
Personalisation		
Feedback is tailored to my needs	3.7	4.0
Comments consider my learning style	3.6	3.9
Feedback is relevant to my work	4.0	4.2
Follow-Up and Dialogue		
Opportunities for feedback discussion	3.8	4.0
Guidance on implementing feedback	3.9	4.1
Chances to ask questions or clarify	3.7	3.9

Clarity and Specificity: Both students and educators generally rated feedback positively, though students suggest a need for more detailed examples.

Tone and Supportiveness: Feedback was perceived as respectful and constructive by both students and educators.

Impact on Motivation: Students reported slightly lower motivation impacts compared to educators, indicating potential areas for improvement.

Personalisation: Students felt feedback could be more personalised, while educators believe they are doing so effectively.

Follow-Up and Dialogue: There is room for improvement in providing structured follow-up and opportunities for discussion.

These tables summarised the demographic distribution and perceptions of feedback effectiveness, highlighting areas where feedback practices could be enhanced.

Survey Results

The survey responses provided valuable quantitative data on the clarity, tone, and motivational impact of feedback. The results are summarized below:

Table 2: Clarity and Specificity of Feedback:

Category	Students Agree (%)	Educators Agree (%)
Clarity and Specificity	62	76
Respectfulness of Feedback	68	84
Motivational Impact	57	63
Personalisation of Feedback	41	37
Frequency of Feedback	53	65

While 62% of students felt that the feedback they received was clear and specific, a higher percentage of educators (76%) believed they provided clear feedback. This discrepancy suggests that there may be a gap in how feedback is delivered versus how it is perceived.

Respectfulness of Feedback: Most students (68%) felt that feedback was delivered respectfully, though 20% of students found some feedback to be overly harsh. In contrast, 84% of educators believed they used a respectful tone, indicating that educators generally perceive themselves as maintaining a positive feedback environment.

Motivational Impact of Feedback: Feedback was seen as motivating by 57% of students, but a significant portion (28%) reported feeling discouraged by negative feedback. Educators were slightly more optimistic, with 63% believing that their feedback motivated students, though they acknowledged challenges in maintaining motivation through criticism.

Personalisation of Feedback: Only 41% of students believed that the feedback they received was personalized, reflecting the challenges of providing individual feedback in large classrooms. Educators reported similar struggles, with 37% acknowledging that feedback was often generalized due to time constraints.

Interview Findings

The qualitative data from interviews provided deeper insights into the experiences of both students and educators:

Student Reactions to Negative Feedback: Many students described feeling initially discouraged by negative feedback, especially if it was delivered without sufficient explanation or suggestions for improvement. However, students who received more specific and constructive feedback were more likely to view it as an opportunity to learn and improve. One student remarked, *"When the teacher tells me exactly what I need to fix, I know how to do better. But when they just say 'wrong' or 'needs improvement,' it feels frustrating."*

Educators' Strategies for Balancing Criticism and Support: Educators described the challenge of delivering negative feedback in a way that would not harm student self-esteem. Several educators mentioned using a "praise-critique-praise" sandwich method, in which they start with positive feedback, provide constructive criticism, and end with encouragement. One educator explained, *"I try to remind students that the critique is not about them as people but about their work, and that they have the ability to improve."*

Cultural Considerations: Both students and educators acknowledged that Gambian cultural values, such as maintaining respect for authority and harmonious relationships, play a significant role in how feedback is delivered and received. Some educators indicated that they often avoid being too direct in their criticism to avoid damaging the student-teacher relationship.

Key Findings

1. **Feedback Gaps**: Students rated feedback lower than teachers, especially in personalization and motivational impact.
2. **Cultural Dynamics**: Teachers often used indirect or supportive feedback to preserve respect, sometimes at the expense of constructive critique.
3. **Emotional Impact**: Students reported discouragement when feedback was vague or overly critical.
4. **AI Implications**: While participants recognized that AI could provide faster and more individualised feedback, concerns were raised about depersonalization, overemphasis on errors, and lack of cultural nuance.
5. **Challenges in Large Classrooms:** Resource constraints and large class sizes make it difficult for educators to provide individualised feedback. Alternative strategies, such as peer feedback or the integration of technology, may offer viable

solutions for delivering more personalized feedback in such environments.

Implications for Educators

Educators must carefully consider how they provide feedback, balancing negative criticism with motivational support. Culturally appropriate and respectful communication strategies are essential, especially in non-Western educational settings like The Gambia. Moreover, the study underscores the importance of involving students in the feedback process, encouraging them to reflect on and engage with the feedback they receive.

Discussion of findings

This study investigated how Gambian educators deliver negative feedback in language education, how students perceive feedback (including possible AI-driven approaches), and what lessons can guide the cautious integration of AI into feedback processes. The discussion below is organised by each research question and links evidence to interpretation, pedagogical implications, and practical recommendations.

Delivery of Negative Feedback: Balancing Criticism and Support in Language Education

Findings indicate that feedback practices in Gambian language classrooms are contextually shaped by class format, instructor experience, and workload. With **60% of students** in lecture-based courses, negative feedback in many language classes is often brief and directive - focused on correcting form, grammar, or explicit task errors. In smaller seminar and lab settings (15% each), teachers more frequently adopt dialogic and facilitative moves that invite learner reflection and revision. Educators with intermediate experience (6–10 years) were most likely to blend directive corrections with facilitative prompts, suggesting a developmental trajectory in feedback competence.

Three strategies consistently emerged as effective in balancing criticism and support for language learning:

1. **Priority-based directive guidance:** Teachers identify a small number (typically 2–3) of high-impact errors (e.g., recurring grammar points, flawed argument structure) and give explicit corrective steps. This reduces cognitive overload and gives learners clear, achievable actions.
2. **Facilitative prompting for higher-order skills:** After corrective guidance, teachers employ reflective questions and modelling (e.g., "What alternative phrasing would better convey your meaning?"), which fosters metalinguistic awareness and learner agency - especially valuable for writing and speaking tasks.
3. **Tone moderation and relational framing:** Effective teachers prefaced criticism with affirmation of effort or progress and framed errors as normal parts of development. Students reported greater willingness to revise when corrections were accompanied by respectful language and an invitation to improve, rather than blunt judgment.

Interpretation: In language education - where affect (confidence), practice, and iterative revision matter - an integrated approach that pairs clear, task-focused directives with facilitative scaffolds and supportive tone best promotes sustained improvement. Practically, language teachers should alternate immediate corrective feedback (to address surface errors) with facilitative activities (peer review, guided revision) that develop autonomy and communicative competence.

Students' Perceptions of Feedback Clarity, Tone, and Usefulness in Human and AI-Driven Contexts

Student responses revealed three interrelated perceptions:

1. **Clarity is paramount.** Students prioritised specific, actionable comments (e.g., exact sentence or structural changes) over general evaluative remarks. Where feedback identified the problem and suggested a concrete fix, students were more likely to act on it. This preference was especially strong among students who rated themselves "average" (50%), who described clear guidance as morale-boosting rather than threatening.
2. **Tone influences receptivity.** The perceived emotional framing of feedback - respectful versus harsh - affected engagement. First-year students (35% of sample) were particularly sensitive to tone; harsh, evaluative comments tended to demotivate and sometimes led to withdrawal from revision activities.
3. **Conditional openness to AI assistance.** When asked about AI-driven feedback, students were cautiously receptive but raised specific concerns. They valued AI for rapid, consistent, and grammar-oriented corrections (where directive feedback is appropriate), but questioned its ability to: (a) interpret nuance in argumentation or cultural language use, (b) provide empathetic tone, and (c) contextualize suggestions to local linguistic varieties. Students indicated greater trust in AI when its output was clearly labelled, explainable, and accompanied by opportunities to discuss or question the suggestions with a teacher.

Interpretation: Students differentiate usefulness by task: AI can be perceived as valuable for surface-level, directive feedback (e.g., grammar, punctuation), while human teachers are preferred for facilitative, meaning-centered, and tone-sensitive guidance. Importantly, students' feedback literacy - ability to interpret and apply comments—shapes how they use both human and AI input. Without training, students may misapply automated suggestions or feel alienated by impersonal feedback.

Lessons for the Cautious Integration of AI in Feedback Processes within 21st-century language Education

Synthesising educator practices and student perceptions yields several lessons for integrating AI in language feedback responsibly and effectively:

1. **Adopt a human-in-the-loop model.** AI should augment—not replace—teacher judgement. Use AI for rapid, directive feedback on clearly definable issues (spelling, basic grammar, citation format), while teachers provide facilitative critique, interpretive judgement, and empathetic framing. This hybrid preserves the strengths of both agents.
2. **Ensure transparency and explainability.** Any AI feedback must be explicitly identified as machine-generated, include brief rationales for corrections, and indicate confidence levels. Transparency helps students evaluate suggestions critically and maintains trust.
3. **Prioritise feedback literacy training.** Both students and teachers need instruction on interpreting AI output: understanding limitations, distinguishing between surface corrections and substantive rhetorical changes, and integrating suggestions into coherent revisions.
4. **Cultural and linguistic sensitivity.** AI tools must be calibrated for local varieties of English, translanguaging practices, and culturally specific rhetorical norms. Off-the-shelf models risk privileging foreign norms; thus, local customization, human oversight, and teacher mediation are essential.
5. **Safeguard privacy, data ethics, and equity.** Deployments must comply with data protection standards and avoid reliance on tools that require uploading sensitive student work without clear consent. Equity considerations include access—AI should not widen gaps

between resource-rich and resource-poor classrooms.

6. **Pilot, evaluate, scale carefully.** Small-scale pilots in diverse Gambian contexts (urban and rural, public and private) should precede wider roll-out; evaluation metrics should include not only accuracy of corrections but also student motivation, revision behaviour, and learning gains over time.

Interpretation: AI offers pragmatic gains for scaling directive feedback in resource-constrained environments (e.g., large classes, teacher workload). However, its successful adoption in Gambian language classrooms depends on deliberate policies that prioritize human oversight, local relevance, and capacity building.

Pedagogical and Policy Implications

From these findings, four actionable recommendations follow:

1. **Teacher professional development:** Integrate modules on blended feedback strategies, feedback literacy, and basic AI literacy into pre-service and in-service training programs. Emphasize how to combine directive corrections with facilitative questioning and empathetic tone.
2. **Student workshops on feedback use:** Teach students how to interpret, prioritize, and apply both human and AI feedback - encouraging critical engagement rather than mechanical acceptance.
3. **Institutional guidelines for AI use:** Ministries and institutions should issue clear policies on acceptable AI tools, data privacy, pilot protocols, and expectations for teacher oversight.
4. **Practical classroom protocols:** Encourage teachers to (a) provide prioritized comments (2–3 main points), (b) pair corrections with a question or next step, and (c) allow revision opportunities. Where AI is used, require teacher review before students act on substantive edits.

Conclusion

This study explored how Gambian educators deliver negative feedback, how students perceive its clarity and usefulness, and what lessons can be drawn for the cautious integration of artificial intelligence in feedback processes within 21st-century language education. The findings reveal that effective feedback in The Gambia depends largely on educators' ability to balance **directive and evaluative approaches** with a **facilitative tone** that sustains motivation and promotes self-reflection. Educators who provide clear corrective guidance while acknowledging students' effort and progress tend to foster more positive learning outcomes.

Students, on the other hand, interpret feedback not merely by its content but by its **tone, timing, and cultural sensitivity**. They respond best to feedback that combines accuracy with empathy - feedback that encourages dialogue and offers pathways for improvement rather than judgment. This reinforces the importance of relational pedagogy in Gambian classrooms, where respect, encouragement, and communal learning are central to the educational experience.

The study further indicates that while AI-assisted tools can enhance the **efficiency and consistency** of feedback, they cannot replace the nuanced understanding that human educators bring to the classroom. Instead, the cautious integration of AI should focus on **augmenting human feedback**, allowing technology to handle mechanical corrections while teachers retain the facilitative and emotional dimensions that inspire student growth.

Recommendations

Based on the study's findings, several key recommendations are proposed to improve the delivery and perception of feedback within Gambian educational settings and to guide the responsible use of technology in the process.

1. Promote Balanced Feedback Training for Educators

Teacher education programs and professional development initiatives should incorporate modules on **balanced feedback strategies** that integrate directive, evaluative, and facilitative elements. Educators should be trained to provide corrective feedback that maintains students' dignity, emphasises growth, and avoids discouragement. Such training should also address tone, timing, and phrasing, ensuring that feedback supports rather than undermines motivation. Government should strengthen professional development in both feedback strategies and AI literacy, ensuring teachers can contextualize and supervise AI-generated feedback.

2. Encourage Reflective and Dialogic Feedback Practices

Feedback should not be a one-way transmission but a **dialogue between teachers and students**. Educators should encourage learners to ask questions, reflect on comments, and set goals for improvement. Schools can institutionalise reflective exercises such as self-assessment forms, peer feedback sessions, and feedback conferences that help students internalise and act on teacher input.

3. Integrate Cultural Sensitivity into Feedback Delivery

Since communication norms in The Gambia emphasise respect and relational harmony, educators must deliver criticism within a **culturally responsive framework**. This involves framing feedback in ways that maintain social respect, using inclusive language, and being aware of local values surrounding authority and learning. Training institutions and policymakers should provide context-based guidance to help teachers adapt universal pedagogical models to local realities.

4. Enhance Institutional Support for Feedback Practices

Schools and universities should create environments that facilitate effective feedback by addressing **structural barriers** such as large class sizes, limited instructional time, and inadequate training resources. Institutional policies should support manageable teacher - student ratios and allocate time for formative assessment activities that promote individualised attention.

5. Adopt AI Tools as Supportive, Not Substitutive, Mechanisms

AI-driven feedback systems can improve efficiency and accuracy in language education, but they should be used **to complement, not replace, human judgment**. Institutions should develop clear guidelines for AI use that emphasise transparency, data ethics, and teacher oversight. Educators must be trained to interpret AI-generated feedback critically, adding contextual and motivational elements that technology alone cannot provide.

6. Foster Continuous Research and Policy Engagement

Further research should examine how feedback practices evolve with technological integration and cultural adaptation in diverse Gambian settings. Collaboration among educational policymakers, teacher-training colleges, and technology developers is essential to ensure that innovations align with **pedagogical, cultural, and ethical standards**. Longitudinal studies could track how feedback practices affect learner performance, motivation, and resilience over time.

7. Culturally Responsive AI: Advocate for AI tools adapted to Gambian and African cultural values, rather than adopting generic global models.

8. Balanced Feedback Practices: Ensure AI feedback integrates encouragement alongside critique, avoiding criticism-heavy approaches.

9. Equity and Access: Address infrastructural and digital divides to prevent AI adoption from deepening inequalities between rural and urban schools.

In summary, the study calls for a **holistic feedback model** that unites pedagogical clarity, cultural empathy, and technological innovation. Through deliberate teacher training, supportive institutional

policies, and ethically guided AI integration, Gambian educators can create feedback systems that not only correct errors but also **cultivate confidence, engagement, and lifelong learning**. The research underscores that the most effective feedback practices in Gambian education are those that **balance criticism with compassion, precision with encouragement, and innovation with human connection**. The implications call for targeted teacher training, culturally responsive feedback strategies, and thoughtful integration of digital tools that support - rather than substitute - human engagement in the learning process.

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Role of AI in Teaching and Learning of Arabic Language in Pre-Tertiary Institutions in Nigeria

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Abstract

This article examines the significance of Arabic language in Nigerian society, highlighting its role in transmitting culture and education through foreign language learning. It also explores the integration of Artificial Intelligence (AI) in Arabic language teaching and learning, aiming to enhance productivity and effectiveness. The application of AI offers numerous benefits, including improved translation services, increased accessibility, and a deeper understanding of Arabic language and culture. By leveraging AI, Arabic language learning can become more efficient, leading to a more profound appreciation of the language and its cultural context.

Keywords: Artificial intelligence, Educational environment, Arabic language, Globalisation, Tertiary institution in Nigeria.

Introduction

Artificial intelligence and world at large are intertwined forces profoundly impacting the world economy and society, presenting both advantages and disadvantages. AI reduces inequality for social good and health care, education and agriculture can uplift living standards especially in developing countries through the AI driven innovations while will also amalgamate the rich and poor together (Philips and Davids, 2024).

Artificial intelligence (AI), as described by the some researchers, refers to the ability and capability of programmed machines to perform roles or actions that typically require human intelligence such as learning, programme-solving, decision-making, and data collection. According to Pekka (2025), AI involves the simulation of human intelligence in programmed systems that are designed and integrated to operate in ways that resemble human thought and behaviour.

There are several language spoken across the world, aiding as tools of message, communication and interaction among various groups and societies. However, Arabic stands out as one of the six official languages of the United Nations (UN). It is undoubtedly one of the most fascinating and valuable language to learn today, owing to its strong connection to global geopolitics, the tactical implication of the Arabic world, its implication in the eminent of energy, and its rich cultural and historical significance. Arabic is taught as a language of art within the Nigerian educational system and has been merged in curriculum for basic education. It also recognized as a non-vocational electivity subject in the Upper Secondary school core curriculum (Alfabanni, 2024).

Pre-tertiary institution in Nigerian educational system is the level of education that was designed as a stage in between basic and tertiary education. It is also called senior secondary education that prepared student to become a future professional in a field of study at higher or tertiary education level. More so, AI plays positive roles in the society at large, improving our lives in terms of health, economy, politics, religion, education and creating a better performance into academic of students especially students of Arabic in senior secondary schools in Nigeria institutions (Alfabanni, 2024).

Objective of the Study

Consider the following research questions to re-direct your work;

1. How can AI-powered tools enhance Arabic language learning outcomes in pre-tertiary institutions in Nigeria?
2. What are the challenges and opportunities of integrating AI into Arabic language teaching and learning?
3. How can teachers be supported to effectively use AI-powered tools in Arabic language instruction?

Significance of AI in language education

Artificial Intelligence (AI) provide a significant implication in converting and transforming language education by providing personalized, adaptive, and interactive learning experiences that enhance learners' engagement, performance, and autonomy. Through AI-driven applications such as intelligent tutoring systems, chatbots, and speech recognition tools, students receive immediate feedback on pronunciation, writing, and grammar, which promotes self-regulated learning and continuous improvement (Yang, Li & Li, 2024). AI also allows data-driven instruction, allowing teachers to tailor lessons to individual learner needs and track progress effectively (Jaleniauskienė et al., 2023). Moreover, AI supports inclusive and flexible learning environments by offering scalable solutions that extend beyond traditional classroom settings, thereby increasing accessibility to quality language education (Akinsemolu & Onyeaka, 2025). Overall, AI not only enhances the efficiency of language teaching and learning but also equips learners with digital literacy skills essential for the 21st century.

Arabic language and the entire world

Arabic language is one of the spoken languages that have speed spread with a significant number of native and non-native speakers in the world. Arabic is the language of Arabs and some non-Arabs and it is a Semitic language. However it's a lingua franca for many communities. While the majority of Arabic language speakers reside in the Middle East and North Africa (MENA) and they are called "Arab world". Arabic is a common language that is placed on an equal footing with other international languages like, English, French, German and others. This language of Arabs was adopted by some international organizations like: United Nation (UN) Organization of Petroleum Exporting Countries (OPEC) and Food and Agriculture Organization (FAO) of the United Nations, as a medium of communication and interaction (Alfabanni, 2024). Arabic language's global presence is doubtless spreading in numerous countries communities and playing a significant role in religious, cultural, political spheres and area of education. Arabic is a historical and modern world language (Alfabanni, 2024).

Pre-Tertiary Institution in Nigeria

It was spelt out from the senior secondary school curriculum that students take core subjects like, English, mathematics and civic education, along with elective subjects in science, technology, arts and humanities. Also, this curriculum laid emphasizes on technical, vocational and entrepreneurial education to equip students with practical skills for the workforce and higher education.

While at the end of SSS3, students take the Senior Secondary School Certificate Examination (SSCE): National Examinations Council Certificate (NECO), National Business and Technical Examinations Board Certificate (NABTEB), National Board for Arabic and Islamic Studies (NBAIS) Certificate or the West African Senior School Certificate Examination (WASSCE) to be eligible for tertiary education or gain certification. There are also different commissions from the different ministries of education in the states of Nigeria that control senior secondary school like Teaching Service Commission (TESCOM) in Kwara State. All these commissions are under the National Senior Secondary Education Commission (NSSEC) that is responsible for setting, regulating and enforcing minimum standards

for senior secondary education (Alfabanni, 2024).

Place of Arabic in Nigerian Educational System

Arabic education in Nigeria has a long history tracing back to the advent of Islam.

The Islam was introduced to Nigeria accompanied with the learning of Arabic. The Arabic language is the language of Quran and Islamic teachings. Arabic language remains as a tool used to understand and interpret the Quran and the teaching of Islam. The Nigerian government at all levels (National, State and local levels) recognize the importance and role of Arabic and Islamic education as was stated in the National Policy on Education (NPE).

Arabic education is the goal of inculcating in pupils permanent literacy and numeracy and ability to communicate effectively and giving the pupils citizenship education as basis for effective participation and contribution to the life of the society. Also government also ensure the integration of formal basic education curriculum into Quran and Islamic Schools, (AlfaBanni, 2024).

From the above assertions, Arabic language as a subject was included in the curriculum for basic education. Also, recognized as a non-prevocational elective under Basic 7-9 in secondary schools and was among non-prevocational electives in senior secondary school core curriculum, (FRN, 2013). For the fact that, Arabic is an elective subject at both Basic 7-9 and senior secondary levels, some Colleges of education, Polytechnics and Universities offer diploma, graduate degree courses in Arabic language, literature and Islamic studies.

There are Arabic programmes in some of the mentioned institutions into which learners specializing in Arabic are admitted every year. And some of the graduates in Arabic language education are also found in industries, large scale business, local, state and national security officers, company, hospital for keeping records, advertisement and communication, (Oladosu, 2012).

Arabic language is among the language of diplomacy is also that of inter ethnic communication to people who share the same ethnic background, those use Arabic on formal occasions such as in inaugural ceremonies, gathering on Islamic issues among others (Yang, 2024).

Significant Role of AI in Teaching and Learning of Arabic

This sub-topic should be categorized into two divisions. The first is significant role of AI in teaching while the second is significant of AI in learning.

i. Significant Role of AI in Teaching Arabic:

a. **Personalized Arabic Language Learning**

Artificial Intelligence algorithms can gives analysis of Arabic language learners' strengths and weaknesses in some areas like, Arabic Pronunciation, Arabic grammar, Arabic Vocabulary and Arabic diacritic marks. It also allows the creation of designed Arabic learning paths and exercises that cater for individual needs. And, also adapt the difficulty levels of Arabic lessons based on students of Arabic progress.

b- **Immediate outcome and Assessment**

Artificial Intelligence instruments can provide real-time outcome on Arabic Pronunciation, Arabic grammar and Arabic vocabulary usage, because it gives room for the Arabic learners to correct their mistakes immediately, and improving retention and accelerating proficiency. It also assesses Arabic student work, relieving the Arabic teacher to provide individual needs.

c- **Interactive and Engaging Arabic Learning**

Applications designed for Artificial Intelligence can incorporate interactive exercises, games and simulations to make Arabic learning more productive engaging and real. This can motivates students and improve retention of new Arabic information, e.g Arabic virtual tutors, Arabic voice assistants

and Arabic interactive language learning platforms.

d- **Arabic Content Customization**

Artificial Intelligence can creates Arabic customized learning materials, such as Arabic vocabulary lists, Arabic reading passages and Arabic grammar explanations. Arabic teacher can also designed Arabic curriculum of special needs to their special Arabic students. Moreso, it can also create new content such as sample Arabic sentences and dialogues to make Arabic learning effective.

e- **Reduced Stress on Arabic Teachers**

Artificial Intelligence tool can helps Arabic teacher to manage the classroom and his time. Moreso, it can also provide Arabic teachers with information and insights into students of Arabic performance, and giving room for them to have good performance enhancement and make Arabic teacher to develop suitable Arabic curriculum for them (Alfabanni, 2024)

Significant Role of AI in Learning Arabic

Artificial Intelligence improves Arabic language knowledge by incorporating the previously mentioned in teaching because, teaching and learning are also the interaction of teacher and students in order to come out with relevant information's desired. The key points are:

- Personalized and Adaptive Arabic Learning
- Interactive and Engaging Arabic Learning
- Immediate Outcome and Assessment

An additional important aspect that was not fully discussed earlier is accessibility and affordability. When Arabic language learning platforms are effectively powered by Artificial Intelligence, they can make Arabic education more accessible to learners worldwide. However, these platforms created can also be more effective and affordable than traditional tutoring or language classes (Alfabanni, 2024).

Examples of AI-powered language learning tools

- Busuu – Offers AI-driven personalised study plans that adapt to the learner's goals, monitor progress, and combine that with social interaction from native-speakers.
- Lingvist – Uses AI to generate personalised vocabulary lists and adaptive lessons based on each user's performance and weaknesses.
- ELSA Speak – Focuses on pronunciation by using speech-recognition AI to give real-time feedback on sounds, intonation, rhythm and accents.
- Memrise – Employs AI (plus spaced-repetition) to tailor vocabulary lessons and incorporate real-life video/audio clips of native speakers; it adjusts to the learner's pace and performance.
- Xeropan – Features AI-powered chatbots (speakbots) and smart tracking of weak/strong vocabulary items, enabling realistic conversation practice and adaptive review (Yang, 2024).

Conclusion

Arabic is a language of international importance, especially the Middle East and North Africa (MENA). Studying Arabic can open numerous opportunities in areas such as international tourism, business and academic pursuits. However, learning the Arabic language can help Nigerians understand, relate and connect with other cultures and societies. The effort of Artificial intelligence in teaching and learning is enormous because: it is possible for AI to revolutionizing education,
it offering and guiding to personalized and individualized teaching,
it improves learning outcomes for the learners,
it analyses students gathered data,
it provides immediate feedback to teachers and students,
it allows teachers and students adjust and edit their teaching and learning methods,
it (AI) also helps students to stay on teaching and learning track with their studies.

1-Lack of qualified Arabic teachers that can handle the teaching of a subject as a professional certified and experienced one.
2- There is no unified syllabus that guides the teaching and learning of Arabic in some Arabic schools especially private Arabic schools.
3- Relevant Arabic text books were not provided to teach Arabic and learn Arabic language that will meet modern age instructional materials.
And. there are some ways that Arabic language can be more productive and effective in teaching and learning if the stakeholders can abide by them such as: i- organizing Arabic teachers training programme,
ii- Assessing Arabic teachers through workshops, conferences and symposium attending often and often,
iii- Developing more modern teaching methods for teaching foreign language as Arabic is one of the foreign language in Nigerian educational system,
iv- The government and other stakeholders should join hands together to improve Arabic education and promote its role in the Nigerian educational system.

Recommendations

i- Emphasize Arabic education and skills training**,**
ii- Improving Arabic language education and entrepreneurship training on how to make Arabic studies marketable in the world market that will prepare the workforce for the jobs of the future,
iii- Ensuring the students of Arabic are not left behind as AI transform industries,
iv- Governments, educational and institutions should cooperate on how to create unified curriculums that includes AI (Artificial Intelligence), ML (Machine Learning) and modern methods of teaching foreign languages.

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JOURNAL OF INTERNATIONAL ASSOCIATION OF LANGUAGE EDUCATORS (JIALE)

A Publication of International Association of Language Educators

Vol. 5 No. 2, (June 2025)

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Contents

Technovation and Language Pedagogy in Nigerian Tertiary Institutions: Ascertaining Teachers' Awareness and Adoption of AI Deliverables
Ashabua, Derick Achu, Ogar, Monica Thomas, Onah, Grace Gregory & Wonah, Paul Odey 1

A Cautious Optimism of Teachers' Perspectives on the Use of AI in Language Education
Dr Fatimah Adewumi Ayankojo & Dr Evelyn Nwene Enu 10

Texts Accessibility, Thematic Familiarity and Genral Preference as Predictors of Secondary Students' Achievement in Prose Literature-in-English in Oyo State
Salimat Adebola Ayegboyin, Ph.D 16

Artificial Intelligence and the Development of Students' Imaginative and Creative Writing in Senior Secondary Literature Curriculum
Olanike Aina Bafunso Ph.D 26

Reinforcing Bilingual Education Through Literacy Curriculum and Artificial Intelligence
Oluwafunminiyi Afolasade Esther 34

Fostering Language Identity and Attitude through Artificial Intelligence: The Nigerian Indigenous Language Experience
Babalola, Boluwatife Z. and Prof. Fakeye, D. O. 39

The Application of Artificial Intelligence in Language Translation: Advancing Multilingual Education and Communication
Dr Adebisi Elizabeth Banjo, Oluwatosin Adebomeyin Amisu and Adekunle, Asimiyu Adebowale 48

AI-Enhanced Reading Strategy and English Reading Comprehension Achievement Among Public Senior Secondary Students in Ibadan, Nigeria
Omosola Christiana Olatubosun, Ph.D 58

Artificial Intelligence in the Service of Language Translation
Juliet Tawa Mustapha & J. O. Adedigba, Ph.D 67

Analysis of Grammatical Errors in Senior Secondary Students' Essay Writing in Ilorin, Kwara State, Nigeria
Safi Lawal, Ph.D; Abdulwaheed Abiodun Abdulrahman, Ph.D. & Hassana Taiye Umar, Ph.D 74

Assessing Influence of Electronic Messaging on Writing Skills of Senior Secondary School Students in an AI-Driven Era in Osun State
J. O. Tairu, Koyejo, E. B., Adeyemo, O. O. & Benedicta, G. 81

Exploring the Balance Between Human Teachers and AI Tutors in the Language Classroom
Adebukonla Mama Olu-Daniels Ph.D & Kehinde Pedro AMORE Ph.D 91

Impact of Artificial Intelligence Development on Teaching and Learning of Literature
Oluwadare Beatrice Idowu, Ph.D 101

Artificial Intelligence and Plagiarism: Ethos of Application in English Language Teaching (ELT)
Dare Williams, Omotoyinbo and Obiajulu Martha, Obi 110

Teacher Lesson Delivery in English Essay Writing in Egbeda Local Government Area, Oyo State
Deborah Oluwayomi Oyesola 118

Assessing the Effectiveness of AI – Powered Chatbots in Enhancing the Indigenous Language Learning in Ogbomoso North Secondary Schools, Oyo State, Nigeria
Adebile Ruth Foluke, Ph.D 123

Impact of Artificial Intelligence Tools on Senior Secondary School Students' Critical Thinking in English Written Composition
ADEBAYO, Hameed Supo Ph.D. and OKUNNUWA, Sunday J. Ph.D 132

Reforms for Education and Gender Disparity in Arabic Studies
Akano Ishaq Jamiu 142

Technovation and Language Pedagogy in Nigerian Tertiary Institutions: Ascertaining Teachers' Awareness and Adoption of AI Deliverables

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Abstract

This study examined technovation and language pedagogy in Nigerian tertiary institutions, by ascertaining teachers' awareness and adoption of AI deliverables. One theory, two research questions, and two hypotheses guided the study. Literature was reviewed according to the variables of the study. Correlational survey research design was adopted for the study. The population of the study consisted of 554 lecturers from six Federal Universities, and a sample of 154 was accidentally selected. Instrument for data collection was a Google form questionnaire designed to elicit information on teachers' awareness and adoption of AI deliverables. The instrument was validated by experts in language education and measurement and evaluation at the College of Education, University of Calabar. The reliability of the instrument was established through Cronbach Alpha reliability coefficient with an internal consistency of .80 to 84. The Pearson Product Moment Correlation statistical technique was used to test the hypotheses at .05 level of significance. The results revealed that there is a significant relationship between teachers' awareness and adoption of AI deliverables in their language pedagogy. It was recommended among others that teachers should be encouraged and supported to attend seminars and conferences on AI inventions and its applicability in language pedagogy.

Keywords: Technovation, Awareness, Adoption, Artificial intelligence, Language pedagogy.

Introduction

Technovation is a blend of technology and innovation, concerned with the process of integrating cutting-edge technological inventions into existing platforms to achieve ground-breaking improvements. In the context of education, especially language education, technovation emphasizes the adoption and adaptation of emerging technologies—such as artificial intelligence (AI), machine learning, and digital learning platforms—to enhance pedagogical methods, administrative efficiency, and student outcomes (Selwyn, 2019). The rapid advancement of artificial intelligence (AI) has revolutionized various sectors, including education, by introducing innovative tools that enhance teaching and learning processes (Luckin, 2018). In language pedagogy, AI-powered deliverables, such as intelligent tutoring systems, automated essay scoring, and natural language processing (NLP) tools, have uniquely demonstrated significant potential in improving instructional delivery and learner engagement (Hwang et al., 2020). In the same vein, Okonji and Ashabua (2025) opined that AI technology excels in its capacity to learn and evolve progressively. However, the extent to which educators in developing nations, such as Nigeria, are aware of and actively adopting these AI-driven innovations remains underexplored (Oyelere et al., 2021).

In Nigerian tertiary institutions where traditional teaching methods still dominate (Santas, Inobehe & Kente, 2021; Al-Zoubi & BaniYounes, 2015) the integration of AI technologies could address challenges, such as large class sizes, limited instructional resources, and the need for personalized learning, among other challenges (Adewumi et al., 2019). Despite these potential benefits, factors such as inadequate digital infrastructure, limited teacher training, and resistance to change may hinder the effective adoption of AI in language education (Okonkwo & Ade-Ibijola, 2021). This study, therefore, sought to ascertain the awareness and adoption levels of AI deliverables among

language teachers in Nigerian tertiary institutions, examining the barriers and opportunities for technovation in pedagogy. Through this study, the discourse on AI in education within sub-Saharan Africa will be further enhanced.

Statement of the Problem

The integration of Artificial Intelligence (AI) in language pedagogy offers innovative solutions, such as intelligent tutoring systems, automated feedback, and convenience learning. AI-powered tools have demonstrated significant potential in enhancing teaching efficiency, learner engagement, linguistic competence and performance. However, in developing nations like Nigeria, the extent to which these technological advancements have been embraced in tertiary institutions remains uncertain, particularly in the field of language pedagogy. This study, therefore, sought to investigate the level of awareness and adoption levels of AI tools among language teachers in Nigerian tertiary institutions, identifying key challenges and opportunities for sustainable technovation in language pedagogy.

Research Objectives

The objectives of the study were to:

1. Ascertain the extent of AI awareness in language pedagogy among Nigerian university teachers; and to
2. Ascertain the extent of AI adoption in language pedagogy among Nigerian university teachers.

Research Questions

The study was guided by two research questions, namely:

1. To what extent are Nigerian university teachers aware of AI tools in language pedagogy?
2. To what extent do Nigerian university teachers adopt AI tools in language pedagogy?

Research Hypotheses

1. H_1: Teachers' awareness of AI tools does not significantly relate with their language pedagogy.
2. H_2: Teachers' adoption of AI tools does not significantly relate with their language pedagogy

Theory

This study is anchored on Diffusion of Innovations (DOI) theory by Everett Rogers (2003). The theory explains how, why, and at what rate new technologies spread within a social system. The theory identifies five key factors influencing innovation adoption:

a. Relative Advantage: The degree to which AI tools are perceived as better than traditional teaching methods;
b. Compatibility: The extent to which AI aligns with existing pedagogical practices and institutional culture;
c. Complexity: The perceived difficulty in using AI technologies;
d. Trialability: The ability to experiment with AI tools before full adoption; and
e. Observability: The visibility of AI's benefits to educators and stakeholders.

The Diffusion of Innovation Theory was primarily developed and formalized by Everett Rogers in his seminal 1962 book, Diffusion of Innovations, which synthesized over 500 prior studies; however, the theory's foundations were laid by earlier sociologists like Gabriel Tarde, who proposed the S-shaped adoption curve, and Bryce Ryan & Neal C. Gross, whose seminal 1943 study on hybrid seed corn provided the critical empirical evidence of the diffusion process that Rogers built upon. While the theory is criticised for its pro-innovation bias, which assumes an innovation is inherently beneficial and should be adopted by all, ignoring potential harmful consequences. It can also lead to an individual-blame bias by attributing non-adoption to the stubbornness of laggards rather than structural barriers like cost, lack of access, or social

inequality. Furthermore, the theory fails to adequately address how the diffusion process can widen social gaps, as outlined by the knowledge Gap hypothesis, and it often oversimplifies the complex, non-linear reality of human adoption behaviour by relying on neat, categorical models. However, the theory provides a foundational backing for the present study because it lays credence as to how technology spreads in the society and how it is been used to solve societal problems. In the same vein, the relevance of the theory to this study is based on its potential to assess whether AI-based language teaching tools are being diffused effectively among educators who are aware of such them, even though in the Nigerian context, resistance to change and infrastructural limitations exist (Adewumi et al., 2019),

Literature Review

The integration of Artificial Intelligence (AI) in education has ushered in transformative pedagogical approaches worldwide. In language education specifically, AI-powered tools such as intelligent tutoring systems (VanLehn, 2011), automated writing evaluation (Shermis & Burstein, 2013), and conversational agents (Fryer et al., 2017) have demonstrated significant potential to enhance learning outcomes. In this vein, Thomas, Gambari, Yusuf, Abanikannda and Daramola (2024) carried out a study on the assessment of lecturers' awareness of artificial intelligence for education in a Nigerian university. The study adopted a descriptive survey research design. A sample of 271 lecturers was selected using a stratified random sampling technique. The study was guided by two research questions and corresponding research hypotheses. A researcher-designed structured questionnaire was used for data collection, which four experts validated. The questionnaire was pilot-tested, and the data obtained were subjected to statistical analysis using the Cronbach alpha correlation formula, and a reliability coefficient of 0.87 was obtained. Descriptive statistics of mean and standard deviation were used to answer the research questions. The findings of the study revealed that lecturers are aware of AI, with a grand mean of 2.57. Independent samples t-test analysis showed that $t = 1.047$, $p > 0.05$, indicating that no significant difference exists in the mean response of male and female university lecturers' level of awareness of artificial intelligence for education. Based on the findings, it was recommended that conferences, seminars and workshops be organised for lectures to increase their level of awareness of the numerous opportunities that AI can provide in augmenting their educational activities.

In another study, Thomas, Gambari, Peter, Gbore and James (2025) looked at the influence of lecturers' years of experience on their awareness, readiness and utilization of artificial intelligence for education in a Nigerian university. The study employed a descriptive survey as its research design. The population consisted of the 903 lecturers at Federal University of Technology (FUT) Minna, and a sample of 271 lecturers was selected using the proportional stratified random sampling approach. A developed validated, pilot-tested questionnaire was used to collect the data. Mean and standard deviation were used to answer the research questions. One-way analysis of variance was used to test the hypotheses at 0.05. The hypotheses were tested using one-way analysis of variance at 0.05. With $F(2,268) = 0.474$, $p = 0.623$, $p>0.05$ and $F(2,268) = 0.889$, $p = 0.4123$, $p>0.05$, the study found no significant difference in the mean score of university lecturers' awareness and readiness of AI for education based on their years of experience in the university. Furthermore, there was a significant difference in the mean answer of university lecturers on their use of AI for education depending on their years of experience, favoring those with less experience ($F(2,268) = 3.185$, $p = 0.043$, $p<0.05$). The study recommended among others, that

university administration should create useful policies for medium and highly experienced lecturers to use AI.

While developed nations have made significant strides in AI-integrated education, developing countries face unique challenges in technological adoption. Selwyn (2019) noted that successful technovation requires more than just access to technology; it demands institutional readiness, teacher training, and cultural acceptance. To this end, Idhalama, Krubu and Etebu (2023) studied the proficiency of university lecturers in the adoption of emerging instructional technologies in Nigeria. The study employed a descriptive/qualitative research design. A Google form questionnaire made of close-ended items was used to collect data related to Nigerian university lecturers' proficiency in the adoption of emerging instructional technologies. Descriptive statistics including mean and standard deviation were used to describe the status of lecturers. SPSS version 25 was used to run the collected data. A total of 123 responses were recorded and it was discovered that the awareness of emerging instructional technologies by Nigerian lecturers is on the rise, meaning they are aware of emerging teaching technologies. It was recommended that lecturers should make deliberate efforts to know what is new in the teaching profession as far as instructional technologies are concerned. School managements should as a matter of urgency encourage the use of emerging teaching technologies in Nigeria and old lecturers are advised to go for short courses on ICT.

Another study was carried out by Olafare and Ogunrinbokun (2025) on sociocultural and digital communication challenges in AI adoption for classroom communication: Insights from Nigerian Colleges of Education. The study investigated the adoption of AI-mediated communication among academic staff at the Federal College of Education (Technical) Akoka, Nigeria. A mixed-methods approach was employed, combining quantitative survey data from 200 respondents with qualitative insights to explore the extent of adoption, challenges encountered, and sociocultural influences. Results indicated that while 19.2% of respondents extensively use AI tools, a significant number of them challenges, such as inadequate funding (42.3%), limited technical expertise (15.4%), and infrastructural deficiencies (25%). Moreover, sociolinguistic issues, including the mismatch between AI tools and local languages, hinder effective communication. Resistance to change, rooted in traditional teaching norms, further complicates adoption. The study contributed by highlighting the interplay between sociocultural norms and technological resistance, offering a multidisciplinary perspective on AI integration in education. Recommendations include targeted professional development, infrastructure improvements, and the creation of culturally adaptive AI tools. These findings provide a replicable framework for enhancing AI adoption in similar educational contexts globally. Future research should explore longitudinal impacts of AI integration on teaching outcomes and develop policies addressing ethical considerations in AI usage. This study underscores the critical need for inclusive and localized AI solutions to bridge the technological gap in education.

Nigeria's educational sector mirrors many challenges. Despite increasing digitization efforts, many tertiary institutions still rely on traditional pedagogical methods (Adewumi et al., 2019). Studies on e-learning adoption in Nigeria (Okonkwo & Ade-Ibijola, 2021) revealed that while some universities have implemented learning management systems, the integration of more advanced AI tools remains limited. This gap is particularly evident in language departments, where pedagogical approaches have been slower to evolve compared to STEM fields. This study addressed these gaps by providing empirical data on Nigerian language educators' awareness and adoption of AI deliverables,

contributing to the broader discourse on educational technovation in developing contexts.

Methods

The area of study comprised six Federal Universities across the six geopolitical zones of the country, teaching languages. These universities were purposively selected from each of the six geopolitical zones. Correlational survey design was adopted for the study to find out the relationship between teachers' awareness and adoption of AI tools in their language pedagogy. The total population of the study consisted of 554 lecturers. A sample of 154 respondents were accidentally sampled, and their responses were elicited using Google form questionnaire that was used for data collection. The questionnaire was titled "Teachers' Awareness and Adoption of AI Deliverables in Language Pedagogy".

The instrument was developed by the researcher with the help of two language experts and one in measurement and evaluation at the University of Calabar. The questionnaire contained two sections: A and B. Section A was designed to elicit information from respondents' demographic variables while section B was a 28-item four-points scale designed to measure the sub-variables of the study. Each item required the respondent to indicate the frequency of his or her opinions under strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD) weighted 4, 3, 2, 1. The validity of the instrument was established by two experts in Test, Measurement and Evaluation, and one expert in Language Education, sourced from the University of Calabar. To establish the reliability of the instrument (questionnaire) through Cronbach alpha reliability, a trial testing was done using 18 lecturers that were not part of the sampled universities for the study. Cronbach Alpha reliability was conducted and the internal consistency ranged from .80 to .84 which showed that the research instrument was reliable. The hypotheses formulated to guide the study were appropriately tested using a Pearson Product Moment Correlation Coefficient.

Presentation of Results

The result of the analysis is presented in tables 1 and 2. The hypotheses were tested at .05 significance level.

Ho_1: Teachers' awareness of AI tools does not significantly relate with their language pedagogy.

The independent variable in this hypothesis is teachers' awareness while the dependent variable is language pedagogy. In testing this hypothesis, mean and standard deviation of teachers' awareness of AI tools and language pedagogy were computed, compared and correlated using Pearson Product Moment Correction. The results are presented in Table 1.

Table 1: Person Product Moment Correlation of the Relationship between Teachers' Awareness of AI Tools and Language Pedagogy (N= 154)

Variables	N	Mean	SD	r-value	p-value
Teachers' awareness of AI tools	154	14.234	2.432	.854	.000
Language pedagogy	154	19.874	4.342		

*Significant at the .05 level, df =152

The result presented in Table 1 shows the high positive significant relationship between the teachers' awareness of AI tools and language pedagogy (r=.854; p=.000). With this result, the null hypothesis was rejected while the alternative was retained at the 0.05 level of significance. The positive r-value indicated that the more teachers'are aware of AI tools, the more effective their language pedagogy tends to be. On the other hand, inadequate

awareness of AI tools may tend to decrease teachers' effective language pedagogy.

Ho2: Teachers' adoption of AI tools does not significantly relate with their language pedagogy.

The independent variable in this hypothesis is teachers' adoption while the dependent variable is language pedagogy. In testing this hypothesis, mean and standard deviation of teachers' adoption of AI tools and language pedagogy were computed, compared and correlated using Pearson Product Moment Correction. The results are presented in Table 2.

Table 2: Person Product Moment Correlation of the Relationship between Teachers' Adoption of AI Tools and Language Pedagogy (N= 154)

Variables	N	Mean	SD	r-value	p-value
Teachers' adoption of AI tools	154	15.654	2.653	.765	.000
Language pedagogy	154	19.874	4.342		

*Significant at the .05 level, df =152

The results presented in Table 2 shows the high positive significant relationship between teachers' adoption of AI tools and language pedagogy (r=.765; p=.000). With this result, the null hypothesis was rejected while the alternative was retained at the 0.05 level of significance. The positive r-value indicated that the more teachers' adopted AI tools, the more effective their language pedagogy tends to be. On the other hand, no or low extent of adoption of AI tools tend to decrease effective language pedagogy.

Discussion of Results

Hypothesis 1: Teachers' awareness of AI tools does not significantly relate with their language pedagogy.

The results of this hypothesis revealed that teachers' awareness of AI tools significantly relate with their language pedagogy. Since the world is becoming global in nature, it is believed that teachers' knowledge of AI and its deliverables would make learning easier and fascinating. This finding agrees with Thomas, Gambari, Yusuf, Abanikannda and Daramola (2024) who carried out a study on assessment of lecturers' awareness of artificial intelligence for education in a Nigerian university and found out that lecturers are aware of AI, indicating no significant difference in the mean response of male and female university lecturers' level of awareness of artificial intelligence for education. This finding is also in tandem with that of Luckin (2018) who opined that the rapid advancement of artificial intelligence (AI) has revolutionized various sectors, including education, by introducing innovative tools that enhance teaching and learning processes. The educational implication of this finding is that, the significant relationship between teachers' awareness of AI tools and their language pedagogy underscores the critical importance of prioritizing AI literacy and continuous professional development in educational institutions. School administrators and policymakers should invest in comprehensive training programs and workshops to ensure that all educators, regardless of gender or background, are not only aware of existing AI technologies but also understand their potential applications in enriching language instruction. Fostering this foundational awareness is the first essential

Hypothesis 2: Teachers' adoption of AI tools does not significantly relate with their language pedagogy.

The findings of this study revealed

that teachers' adoption of AI tools significantly relate with their language pedagogy. This finding reaffirms previous scholarly discourse on AI integration in language education and the role it has played in making language learning more interesting and engaging. This finding is buttressed by Idhalama, Krubu and Etebu (2023) who studied the proficiency of university lecturers in the adoption of emerging instructional technologies in Nigeria and that the awareness of emerging instructional technologies by Nigerian lecturers is on the rise. The finding is also in line with Olafare and Ogunrinbokun (2025) who studied sociocultural and digital communication challenges in AI adoption for classroom communication in College of Education and discovered significant adoption of AI tools among lecturers. The educational implication of this finding is that, the significant relationship between teachers' adoption of AI tools and their pedagogy highlights that mere awareness is insufficient; the focus must shift to active implementation and sustainable use. To achieve this, educational leaders should provide the necessary logistical support, including access to relevant AI tools, technical infrastructure, and dedicated time for curriculum redesign. By creating a supportive environment that encourages and rewards the adoption of AI, institutions can empower teachers to transition from knowledge to practice, thereby making language learning more engaging, dynamic, and effective for students. Ultimately, these findings advocate for a systemic approach that bridges the gap between awareness and action to fully realize the transformative potential of AI in language education.

Conclusion

Technology in language pedagogy and education delivery has come to stay. Awareness and adoption of AI deliverables in language pedagogy seem to go hand in hand. As evident in this study, a teacher who is aware of a particular language learning tool and is conversant with the functionality of the said tool will likely want to adopt it during his lesson delivery. This practice does not only save time, but compliments the teachers' effort. AI has proven to be an indispensable tool not only in language pedagogy but in the art of teaching and learning in general. Although there are several challenges that come with its adoption, ranging from inadequate facilities and awareness as identified by some studies, undermining its potential in transforming language pedagogy in a digital world should not come to mind. Teachers should be allowed and encouraged to maximise the deliverables of AI for optimal results in the teaching and learning process in order for them to remain relevant in the ever-changing digital world.

Recommendations

1. Teachers should be encouraged and supported to attend seminars and conferences on AI inventions and its applicability in language pedagogy.
2. School management should provide a conducive environment for teachers to explore the benefits of AI by providing constant electricity.
3. School management should provide internet facilities within the school environment to enable staff and students access and verify information from the internet in real-time.

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A Cautious Optimism of Teachers' Perspectives on the Use of AI in Language Education

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Abstract

This paper explores teachers' perspectives on the integration of artificial intelligence (AI) in language education, focusing on the opportunities and challenges from an educator's point of view. While AI offers promising benefits such as personalized feedback, adaptive learning, and administrative efficiency, many language teachers express cautious optimism due to concerns about technical limitations, ethical implications, and the adequacy of professional training. The study highlights the evolving role of teachers as facilitators who must balance leveraging AI's potential with maintaining pedagogical integrity and equity in access. Recommendations emphasize the need for sustained professional development, robust ethical guidelines, and infrastructure support to ensure that AI serves as a complementary tool rather than a replacement for human instruction. This paper aims to contribute to ongoing academic discussions by providing a nuanced understanding of educators' attitudes towards AI, advocating for thoughtful integration that prioritizes both innovation and educational values.

Keywords: Artificial intelligence, Adaptive learning, Cautious optimism, Pedagogical integrity, Personalised learning.

Introduction

The rapid advancement of artificial intelligence (AI) has significantly influenced various sectors, including education. In language education, AI-powered tools such as intelligent tutoring systems, automated writing evaluators, and language learning applications have gained prominence. These technologies offer opportunities for personalized instruction, real-time feedback, and access to diverse linguistic resources. However, their adoption must be approached with cautious optimism, balancing innovation with critical reflection on potential risks and limitations.

AI technologies are increasingly shaping language education through tools like intelligent tutoring systems, automated feedback mechanisms, and immersive learning environments. These innovations promise personalized learning experiences, increased accessibility, and enhanced learner engagement. However, concerns—ranging from privacy issues to over-reliance on technology—necessitate a nuanced, cautiously optimistic stance toward AI integration in language learning.

The integration of AI in language education has introduced transformative advancements in instructional design, learner engagement, and assessment methodologies. AI-powered tools, such as automated tutoring systems, natural language processing (NLP)-based assessments, and gamified learning platforms, have significantly enhanced accessibility, efficiency, and personalization in education. These tools adapt learning content dynamically based on individual progress, provide instant feedback, and enable self-directed learning beyond traditional classroom environments. Additionally, AI-driven gamification strategies have demonstrated improvements in student motivation and engagement, particularly among younger learners and digital natives.

Despite these promising developments, significant challenges remain regarding AI's integration into educational settings. A primary concern is algorithmic bias, as AI models may favor certain dialects, accents, or linguistic structures, leading to potential discrimination in assessment accuracy and student feedback. Data privacy and security concerns have also been raised, particularly in cases where student interactions are recorded and analyzed by machine learning models, often without clear regulatory oversight. Another pressing issue is the evolving role of educators in AI-assisted classrooms. While AI

can support instructors by automating repetitive tasks, concerns persist regarding over-reliance on technology and the dehumanization of language learning experiences.

The paper provides recommendations for ethical AI governance, including data privacy protections, bias mitigation strategies, and professional development for educators.

Literature Review

Benefits of AI in Language Education

Personalized Adaptive Learning

Adaptive learning, also known as adaptive teaching, is an educational method that uses computer algorithms and artificial intelligence to orchestrate interactions with learners and deliver customized resources and learning activities to address the unique needs of each learner. In professional learning contexts, individuals may "test out" of some training to ensure they engage with novel instruction. Computers adapt the presentation of educational material according to students' learning needs, as indicated by their responses to questions, tasks, and experiences. AI-driven adaptive learning systems tailor instruction to learner performance, regularly updating pathways and pacing, and study after study documents positive effects on learning outcomes. Studies show improved results through adaptive learning systems.

Intelligent tutoring systems, gamified platforms, and AI-powered feedback significantly enhance engagement and linguistic competence. The integration of artificial intelligence (AI) into language education has been a focus in recent times.

Boosting Motivation, Engagement, and Self-Regulation

Learners receiving AI-mediated language instruction outperformed peers on grammar, vocabulary, comprehension, and writing. They also showed heightened L2 motivation and increased use of self-regulated learning strategies. The application of information technology in language learning and teaching has garnered considerable attention from language researchers in recent years (Ahmadi, 2018; Shadiev & Yang, 2020; Lai et al., 2022; Lei et al., 2022; Soleimani et al., 2022; Shadiev et al., 2023). Leveraging information technology in language education can enhance the learning experience for learners by enabling personalized, interactive, and communicative learning processes.

Language educators have adopted information technology to create virtual language learning environments that actively engage learners and facilitate language learning processes (Fathi & Rahimi, 2022; Loncar et al., 2023; Nguyen & Ho, 2023).

Enhanced Feedback Mechanisms

Tools like automated essay scoring and speech recognition provide immediate corrections, supporting continuous improvement. AI-powered tools provide learners with instant corrections.

Enhanced Accessibility

AI-powered applications and translation tools break language barriers, enabling learners to access resources and communicate globally. AI translation and interpretation tools allow learners to access content in multiple languages. This enables communication across cultures and participation in global classrooms. Also, learners with disabilities are supported through speech-to-text, which helps hearing-impaired learners follow spoken lessons through instant captions. Text-to-speech supports visually

impaired learners by reading instructions. Adaptive interfaces adjust font size, colour, contrast, and pacing for learners with dyslexia or cognitive challenges. Adaptive mobile AI apps provide practice opportunities outside classrooms; learners in remote or under-resourced areas gain access to quality language instruction without dependence on physical teachers or materials.

Inclusive Learning Environments

AI systems adapt to different proficiency levels, reducing learner anxiety. Personalized feedback ensures that slow or advanced learners receive instruction suited to their needs, promoting equity. AI translation tools allow students from diverse linguistic backgrounds to access content. This fosters participation in mixed-language classrooms, creating equitable opportunities. This means that language education powered by AI ensures that every learner, regardless of background, ability, or learning style, can access and benefit from instruction.

Teacher Support and Efficient Assessment

AI aids educators by automating time-consuming tasks like grading and assessment, freeing teachers to focus on higher-level teaching and individualized mentorship. AI supports curriculum development, enhances teaching efficiency, and facilitates real-time assessment.

Despite these benefits, scholars caution that AI tools are not substitutes for human teachers. Zawacki-Richter et al. (2019) highlight that over-reliance on AI may weaken the social and cultural dimensions of language learning. Issues of bias, data privacy, and infrastructural disparities remain underexplored, particularly in low-resource contexts (Holmes et al., 2019). These gaps underscore the need for a cautious and critical approach to AI integration.

A Stance of Cautious Optimism

Teachers commonly hold complex beliefs that recognize both the value and the limitations of AI, rather than inconsistent views; these dual perceptions reflect responsible professional reasoning, balancing innovation with pedagogical integrity. Recent scholarship has begun to critique AI integration, advocating for more teacher-centered research that examines how educators actively negotiate, adapt, and transform AI technologies within their specific professional contexts (Aljemely, 2024). Across studies, teacher training and professional development emerge as critical factors influencing AI adoption, though research reveals significant gaps in current approaches.

Casal-Otero et al. (2023) and Su et al. (2024) found out that teachers who received comprehensive training programs demonstrated greater confidence and more sophisticated use of AI tools compared to those with minimal preparation. However, another study (Okafor et al., 2025) revealed that many professional development initiatives focus primarily on technical skills rather than pedagogical integration, leaving teachers uncertain about meaningful incorporation into their teaching practice. Studies across different educational systems highlight similar patterns, with technical training predominating over pedagogical preparation (Olatokun & Ogboh, 2022). These findings point to the need for more holistic approaches to teacher preparation that address both technical competencies and pedagogical applications while acknowledging teachers' professional expertise.

The ethical dimensions of AI in education represent another emerging area of inquiry, though research remains limited. Research has found out that teachers often feel unprepared to navigate these ethical complexities, particularly regarding student data protection and algorithmic transparency (MIT RAISE, 2024; Kamali et al., 2024).

Teachers' Positive Perceptions

Teachers often highlight several advantages of AI in language education. AI facilitates personalized learning, enabling learners of varying proficiency levels to receive targeted support (Luckin et al., 2016). It also provides immediate feedback, allowing students to learn from errors in real time without waiting for teacher intervention. AI can reduce teachers' administrative workload, particularly in grading and assessment, freeing them to focus on higher-order instructional tasks (Zou et al., 2023). Teachers acknowledge that AI can enhance learner engagement by

introducing interactive, gamified, and adaptive tasks.

Teachers' Concerns and Reservations

Despite these benefits, teachers' perspectives often reflect caution. A major concern is the potential erosion of human interaction in language learning, a domain where interpersonal communication, cultural exchange, and emotional engagement are crucial (Holmes et al., 2021). Teachers also fear over-reliance on AI tools, which may reduce learners' critical thinking and problem-solving abilities. Ethical issues such as data privacy and algorithmic bias further complicate teachers' acceptance (Williamson & Piattoeva, 2022). Additionally, many educators report insufficient training in AI use, leading to apprehension and underutilization of tools if available at all.

The Notion of Cautious Optimism

The term "cautious optimism" captures the balance teachers maintain between enthusiasm for AI's opportunities and skepticism about its risks. Teachers acknowledge AI's potential but advocate for it to serve as a supportive tool rather than a replacement for human instruction (Zou et al., 2023). This perspective emphasizes the irreplaceable role of teachers in fostering creativity, empathy, and cultural understanding —dimensions of language learning that AI cannot fully replicate.

Case Studies and Practical Applications in Nigeria

Case Study 1: AI-Powered Literacy Tools in Basic Education

In Nigeria's Universal Basic Education (UBE) framework, some pilot projects supported by NGOs and EdTech companies have introduced AI-driven literacy applications such as 'Feed the Monster' and Global Learning XPRIZE tools in primary schools. These applications use speech recognition and adaptive learning to support children's reading in English and local languages. Teachers acknowledge that these AI-based tools help struggling readers catch up by offering personalized feedback outside classroom hours. However, teachers remain cautious about over-reliance on technology, noting that many learners lack consistent access to devices, electricity, or internet connectivity (Adebisi, 2021).

The optimism lies in the recognition that AI can reduce literacy gaps; the caution stems from infrastructural and socio-economic barriers.

Case Study 2: AI Chatbots for English Language Practice in Secondary Schools

Several private schools in Lagos and Abuja have begun experimenting with AI-powered chatbots (e.g., Microsoft's Immersive Reader) to supplement English language practice. Teachers report that chatbots help students practice conversational English outside the classroom, particularly useful in large classes where individual speaking time is limited. Teachers, however, raise concerns that students may misuse chatbots to complete assignments or receive incorrect cultural or pragmatic feedback. Their cautious optimism reflects appreciation of the chatbot's potential to extend learning time but awareness of the need for teacher monitoring.

Case Study 3: AI in Distance and Open Learning (NOUN)

The National Open University of Nigeria (NOUN) has explored AI-driven platforms to improve learner support in English language and communication courses. Chatbots and intelligent tutoring systems have been piloted to handle student queries, deliver automated feedback on assignments, and provide language practice. AI reduces response time and workload, especially given NOUN's large enrolment. However, concerns persist about the quality of AI-generated feedback and its limited ability to handle nuanced academic questions. Tutors maintain cautious optimism, seeing AI as a tool to enhance scalability while emphasizing the continued need for human facilitation.

Case Study 4: Teachers' Professional Development and AI Awareness

AI-related professional development initiatives are still limited in Nigeria, but programs such as the Teachers for Nigeria Fellowship and Nigerian Educational Research and Development Council (NERDC) have begun sensitizing teachers to EdTech tools, including AI applications for language learning. Teachers generally express interest and curiosity about AI's potential but highlight training gaps and a lack of local-language AI tools.

This reinforces the idea that teachers are optimistic but cautious until adequate professional support and policy frameworks are in place.

Implications for Knowledge and Development

1. **Infrastructure as a Barrier**: Teachers highlight unreliable internet and electricity as major obstacles to AI integration.
2. **AI as Support for Overcrowded Classrooms**: With large class sizes common in Nigerian schools, AI offers possibilities for individualized feedback.
3. **Need for Local Relevance**: Teachers note that most tools are designed for Western contexts and often lack Nigerian or African cultural and linguistic contexts.
4. **Professional Development Gaps**: Without adequate training, teachers struggle to use AI effectively and ethically.

Conclusion

This paper has examined teachers' perspectives on the use of artificial intelligence in language education through the lens of cautious optimism. It is clear that teachers recognize AI's potential to transform language learning. AI tools provide personalization, immediate feedback, workload reduction, and greater accessibility, especially in contexts with large class sizes and limited resources. Teachers in Nigeria and globally acknowledge the value of tools such as chatbots, automated essay scoring systems, Grammarly, Duolingo, and speech recognition technologies as supportive aids in language teaching.

However, alongside optimism lies caution. Teachers consistently express concerns regarding the erosion of human interaction, the risk of overdependence, data privacy and algorithmic bias, and the inadequacy of professional training. In Nigeria, infrastructural challenges such as unstable electricity and poor internet access further limit effective AI adoption. Teachers therefore adopt a pragmatic stance, embracing AI where it enhances instruction but resisting its use as a replacement for human pedagogy.

Recommendations

1. **Teacher Training and Professional Development**: Continuous professional development programs should be designed to equip teachers with AI literacy, including technical competence, critical evaluation skills, and ethical awareness. Nigerian teacher-training institutions (e.g., colleges and faculties of education in universities) should integrate AI modules into their curricula.
2. **Blended Learning Models**: Policymakers and educators should promote blended models where AI supplements but does not replace teacher-led pedagogy. Teachers should be encouraged to use AI for routine tasks (e.g., grading, practice drills) while focusing on fostering creativity, cultural understanding, and human interaction.
3. **Ethical and Regulatory Frameworks**: Government and educational authorities should develop policies addressing data privacy, algorithmic transparency, and accountability in AI adoption. Regulatory bodies such as the NERDC and the Federal Ministry of Education should develop guidelines for safe and equitable AI integration.
4. **Localization and Cultural Relevance**: AI tools should be adapted to Nigeria's linguistic and cultural diversity, supporting not only English but also indigenous

languages such as Yoruba, Hausa, and Igbo. Local EdTech startups should collaborate with teachers to design tools aligned with Nigerian curricula and classroom realities.

5. **Infrastructure Investment**: For AI to thrive in Nigerian schools, infrastructural improvements in electri-city, internet connectivity, and device accessibility are critical. Public-private partnerships could play a vital role in addressing these infrastructural gaps.

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Texts Accessibility, Thematic Familiarity and Genral Preference as Predictors of Secondary Students' Achievement in Prose Literature-in-English in Oyo State

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Abstract

This study was carried out to investigate text-related factors (texts accessibility, thematic familiarity and genral preference) as predictors of achievement in prose Literature-in-English among senior secondary students in Oyo State. The simple random sampling technique was utilised in selecting Oyo Central Senatorial District out of the existing three in Oyo State, 10 Local Government Areas out of the existing 11 in the Senatorial District, 50 (SS) schools (five per LGA) and 2,500 SS II prose literature students (50 from each SSS). The instruments used were Texts Accessibility (r=0.84), Thematic Familiarity (r=0.86), Genral Preference (r=0.93) and Prose Literature-in-English Achievement Test (r=0.81). Data were analysed using descriptive statistics and Multiple Regression at 0.05 level of significance. The findings showed that genral preference had a positive significant relationship with students' achievement in prose literature (r=.210; p<0.05) while texts accessibility (r=-.147; p<0.05) and thematic familiarity (r=-.127; p<0.05) had a negative significant relationship with students' achievement in prose literature. Texts accessibility, thematic familiarity and genral preference ($F_{(4;\ 2495)}$ =479.681; Adj. R^2=.091; p<0.05) had significant joint contribution to students' achievement in Prose Literature-in-English, accounting for 9.1% of the variance. Text accessibility (Beta=-.140; p<0.05) and general preference Beta=.241; p<0.05) had significant relative contribution to students' achievement in Prose Literature-in-English while genral preference with the highest Beta weight (Beta=.241; p<0.05) predicted students' achievement in prose literature. Based on the findings, it is recommended that parents should provide set texts in prose Literature-in-English for their wards so as to improve their achievement in prose Literature-in-English. Prose Literature-in-English teachers should organise debates or discussions on different aspects of prose literature to help students hone their analytical and persuasive skills.

Keywords: Texts accessibility, Thematic familiarity, Genral preference, Achievement in prose Literature-in-English

Introduction

Literature is written and unwritten works that are considered to have artistic and intellectual merits by frequently using language in ways that are different from everyday language. It is the entirety and interpretation of people's cultures; it explains language, ideologies, methods of nation-building, psychology, and behaviour patterns among people throughout time and space. This branch of study depicts the human condition and environment.

According to Ayegboyin (2024), literature differs from other disciplines due to the presence of unusual concepts, the use of special forms of interaction, language, and style. With the presentation of human experiences, spirituality, and socio cultural views, it purposefully works on reconstructing human experiences within the creative framework of arts. According to Fakeye (2015), reading literature can help you unwind, educate yourself, and have fun. It amuses the readers, giving them a way to release stress and frustration. Ezeokoli and Adefulire (2018) assert that literature takes the reader to unknown locations while reflecting society and connecting them to themselves, other people, and the larger world. Readers can go to other locations, see other cultures, and learn that they are not alone in anything they go through because there will always be an actor who has gone through it (Adeosun, 2021). Literature captures life's essence and compels the reader to examine the details of other lives in greater detail therefore, altering the reader's outlook on life (Azindoo, 2014).

In Nigeria, literature is taught as Literature-in-English and offered by arts and humanities students at the senior secondary school level; it is equally integrated into English language at the junior secondary school (National Policy on Education, 2013; Idialu, 2014; Olaniyan, 2014). According to Moss (2000), Literature-in-English is the result of the creative and imaginative faculties of the human mind. It is an artistic, enjoyable, and visually appealing way of expressing thoughts, emotions and experiences. It is a form of art that captures the social context in which it is created. This artistic creation enhances students' creativity, extends their understanding, intensifies their experiences, and elevates their viewpoint. It serves as a mirror through which learners view the outside world and make sense of the events that are taking place there. Essentially, studying the subject in our learning curriculum is essential to exposing and expanding readers' and pupils' understanding of many cultures and languages (Dewitt & Wei, 2020).

There are three genres included in Literature-in-English curriculum in Nigeria, namely: prose, drama and poetry. Poetry is a form of creative writing in which the message is implied rather than explicitly stated through the use of compressed language (Fakeye, 2012). It is written with exquisite thinking, language, forms, rhythm, and emotion in well-structured lines known as poems; it also addresses the poet's feelings and the events surrounding the writer (Icheku, 2017). Drama is defined as plays intended for performance, utilising actors, sets and additional props (Okolo, 2003; Icheku, 2017). Olatoye (2000) defines prose as any written or spoken language that does not follow a metric rhyme scheme. It is a genre that deviates from established literary conventions (Njoku, 2006).

Prose is a literary genre that defies convention and is distinct from other forms of writing (Njoku, 2006; Ezeokoli and Adefulire, 2018). It takes pleasure in its simple word arrangement, which makes it simply comprehensible. Every novel and short story, with very few exceptions, is written in prosaic forms. Prose can be categorised into non-fiction and fiction. That is, it can be a fictional creation of the writer or a true story. Prose texts that are imagined works of art are classified as fiction, whereas texts that include the author's personal experiences or observations of genuine events are classified as non-fiction. It is a narrative either lengthy or short, composed of words, phrases, sentences, paragraphs, and chapters. It is an account of an incident that may be written down or spoken (Ezeokoli & Adefulire, 2018). Prose is a natural-sounding communication style that uses grammar, punctuation, and word choice to convey its message. It is composed of whole sentences that are narrated in paragraphs. It mimics the style of speech used in daily life. Prose has words placed in appropriate phrases and a logical order to allow the reader to understand the intended message.

However, despite the relative simplicity of language used in prose texts, students' performance in prose as a genre of Literature-in-English has remained consistently poor, a situation that invariably affects their overall performance in the subject. National data from the West African Examinations Council (WAEC) reveal a persistent decline in students' achievement in Literature-in-English over the years. Reports indicate that only a small percentage of candidates obtain credit-level passes annually, suggesting widespread challenges in comprehension, interpretation, and appreciation of literary texts across the country. This pattern is also evident in the Southwestern region of Nigeria, where the

prose analysis compared to poetry and drama. The trend becomes more striking when examined at the state level.

Data from the Oyo State Ministry of Education, Science and Technology further substantiate the problem. The examination results for eight years in a row (2015–2022), gathered from the Ministry makes this clear.

Fewer than 73 (0.5%) of the 14568 candidates who took the examination in 2015 had A1-B3, 769 (5.28%) had C4-C6, 1880 (12.9%) had D7-D8, and 11846 (81.32%) failed. Of the 12817 who took the examination in 2016, only 165 (1.3%) had A1-B3, 1501 (11.70%) received C4-C6, 10500 (81.8250) received D7-D8, and 651 (5.08%) failed. In the subsequent year (2017), from the 5656 that took the examination, only 96 (1.7%) received A1-B3, 817 (14.44%) C4-C6, and 213 (37.28%) D7-D8, while the remaining 2612 (46.18%) failed. In 2018, 9922 candidates took the examination; only 87 (0.9%) received A1-B3, 1194 (12.03%) received C4-C6, 3178 (32.03%) received D7-D8, and the remaining 5463 (55.5%) did not pass the examination.

Nonetheless, there was a slight rise in the number of applicants who took the examination in 2019. 645 (4%) of the 18258 candidates who took the examination received A1-B3, 5409 (30%) had C4-C6, 3628 (20%) had D7-D8, and the remaining 8576 (47%) received F9. Out of the 14276 applicants who took the examination in 2020, 645 (5%) received A1–B3, 1427 (10%) received C4–C6, 3628 (25%) received D7–D8, and the remaining 8576 (60%) did not pass. Just 5952 (37.7%) of the 15806 candidates who took the examination in 2021 received A1-B3, 7533 (47.0%) received C4-C6, 1432 (9.1%) received D7-D8, while the remaining 5317 (33.6%) failed the subject. Of the 12832 candidates that took the examination in 2022, 4177 (32.6%) received A1-B3, 5418 (42.2%) received C4-C6, 1100 (8.6%) received D7-D8, and the remaining 2137 (16.7%) failed the subject.

This result made the number of students that sat for the subjects in 2016-2018 to drop drastically. However, with the increase in number of those that sat for the examination in subsequent years, there was no corresponding better performance in the subject. The persistent unsatisfactory performance of students in this subject was also stressed over the years in the West African Examinations Council's Chief Examiners' reports. It was indicated in the report of 2017 that they performed below expectation in prose, which according to the report, affected their overall performance in Literature-in-English; they exhibited poor knowledge of recommended texts and exhibited poor command of English language. It was also mentioned that the candidates' biggest flaw was their shallow understanding of the recommended texts.

Similarly, the 2018 May/June Report blamed students' poor performance in Literature-in-English on a number of factors, including their inability to read the recommended texts, their excessive reliance on summary notes, their poor command of the English language, their lack of preparation for the examination, and their lack of seriousness. They have poor communication skills and little mastery of prescribed texts, particularly in prose, according to further reports from 2019 and 2022. However, the reports indicated that in those years, students' performance in poetry and drama was better. Ezeokoli (2016) claims that students in Second Language (L2) environments lack the knowledge necessary to comprehend the recommended books and the cultural backgrounds of others, which deters them from reading. But before students can excel in prose literature, they must engage closely with the texts and refrain from copying the ideas and opinions of their teachers and critics. Students' failure to read recommended literature texts can be explained by the aforementioned. The lengthy form of prose writings may also be the cause of this, as it may deter students from reading them.

In an effort to tackle the problem of students' subpar performance in this area of the subject, researchers have conducted a wide range of studies, from the application of effective strategies to problems with the teaching and learning of prose literature, such as text possession and teachers' pedagogical approaches in prose literature instruction (Ezeokoli & Igubor, 2014), among others. The majority of these studies made valuable

contributions to the teaching of prose literature, but students are still not meeting expectations in this and other aspects of the subject. So, it is necessary to look into other potential causes. Therefore, this study investigated text-based factors (texts accessibility, thematic familiarity and genral preference) as predictors of achievement in prose Literature-in-English among senior secondary students in Oyo State.

The recommended prose literature texts are essential to success since they serve as the primary foundation for students' understanding of the prose component of Literature-in-English. The texts are essential for teaching and learning prose Literature-in-English because the content of the examination is based on these texts. Teaching students how to read, analyse, and infer meaning from literary texts is the primary goal of teaching them Literature-in-English. This helps students to see beyond the obvious. Therefore, the availability of these books can either help or hinder students' progress in Literature-in-English and prose literature in particular. Students are required to read one of the two recommended African prose texts as well as one of the two non-African prose texts, however reports have demonstrated that there is insufficient availability of the texts (Ezeokoli & Igubor, 2014). Access to these literary works is essential for success in prose literature, so it is pertinent to supporting learning in prose Literature in English (Zuze & Reddy, 2014). The means by which students obtain the suggested literary texts, whether through ownership, borrowing, or sharing, both inside and outside of the prose literature classroom is known as access to literary texts. One of the most important indicators of academic success is having access to literary texts. Having access to literary texts facilitates the planning of individualised instruction. Texts allow students to study multiple subjects simultaneously and to repeat or re-study as frequently as they like and at their own pace. As part of their learning activities, people who wanted to learn more develop and broaden their deep learning skills, abilities, and methodologies do reference pertinent texts. Texts that portray the current reality and are relevant to everyday life are the source of experiences and exposures.

Anthony (2011) asserts that when teachers and students have access to relevant literary texts, it will be easier for them to understand the topics to be addressed and the structure of each lesson, which is typically written out in great detail. The knowledge is presented in a balanced chronological order and offers learners an ordered unit of work. However, learners may encounter difficulties reading and comprehending the content of the literary texts when they are unfamiliar with the texts' themes.

The degree of familiarity with a subject, method, or item that is associated with the subject is known as thematic familiarity. There is a tendency for students who are familiar with the subject matter or principal idea of a text to comprehend it more fully than those who are not. This demonstrates how beneficial it is to students. Understanding the idea of a prose literary piece gives students the chance to recall or use what they have learnt in authentic classroom. However, studying prose literature as a genre of Literature-in-English goes beyond simply reading passages of literary works and being able to repeat a story's lines. In addition to understanding the text's goal, students must be able to read it carefully, analyse it and participate in rational discussion to gain a deeper understanding discussions. The reader might need to read it more than once before grasping its main points. They tend to gain more advantages the

means of becoming acquainted with key concepts (Norman, 2015).

In a non-English speaking country, the major aim of literature teaching is to improve learners' English ability. This is done in so many ways using specific literary genres, but the unique way is through extensive reading of prose texts. Reading has been found to be

useful in enhancing learners' language capacity. Also, the idea that learners can develop their language skills through extensive reading of prose texts has been a wide spread notion in English Language and literary studies. However, most of the time, students struggle to comprehend the cultural context of the literary texts they read because it differs from their own.

The claim that students prefer prose to either poetry or drama is supported by research. Though students encounter various characters in both prose and drama in both familiar and unfamiliar situations, this is ascribed to the desire of teachers who frequently teach prose before poetry and drama (Timothy & Obiekezie, 2019; Ugwu, 2021). According to Fakeye (2012), students intentionally choose prose because of the knowledge they gain from reading it; it is more intimate and allows them to work independently and reflect more effectively than watching a play. Additionally, Anthony (2011) confirms that students find it more difficult to understand dramatic literature and analyse poetry, which makes it clear that they favour prose over other genres of Literature-in-English. Though, numerous studies have shown that students prefer prose literature (Anthony, 2011; Fakeye, 2012; Daniel, 2013; Tevdovskaa, 2016), they continue to struggle in prose literature performance. According to Fakeye (2012), learning prose poses a psychological threat to students. Students confirmed that the characters, theme, plot, values, attitudes, appreciation, and a large portion of the vocabulary are incomprehensible (Fakeye, 2012).

Numerous studies have demonstrated that students' success in English reading comprehension, Mathematics, and other subjects is strongly influenced by texts accessibility, thematic familiarity and genral preference. (Fakeye, 2012; Anthony, 2011; Akinsulire, 2016). However, the extent to which these elements potentially influence students' learning achievement in prose literature in Oyo State, Nigeria, has not yet been determined based on the literature the researcher has access to. Therefore, the researcher investigated how senior secondary school students' achievement in Prose Literature-in-English is influenced by texts-based factors (Texts accessibility, thematic familiarity and genral preference).

Statement of the Problem

Students study prose literature in school to hone their sensibility and develop other virtues. Even though the SS curriculum places a lot of emphasis on prose literature, students' performance in this area of the course is constantly poor. According to reports from public examination bodies, students' poor performance in prose literature is a major factor in their failure in Literature-in-English, since they perform better in other genres. Students' failure in prose literature has been attributed to a number of issues, including inadequate teaching methods, poor reading habits, a shortage of trained teachers, and over reliance on abridged materials, among others. In order to address this issue, previous research primarily concentrated on interventions, with the few attempts to address texts-based aspects that attempted to improve students' performance concentrated more on other issues. Thus, this study examined texts-based factors (texts accessibility, thematic familiarity and genral preference) as predictors of senior secondary school students' achievement in prose Literature-in-English in Oyo State.

Research Questions

1. What relationship exists between the [illegible] genral preference) and students' achievement in Prose Literature-in-English?

2. Is there a significant joint contribution of the independent variables (texts accessibility, thematic familiarity and genral

preference) to students' achievement in Prose Literature-in-English?

3. What is the relative contribution of texts accessibility, thematic familiarity and genral preference to students' achievement in Prose Literature-in-English?

Significance of the Study

The study has provided empirical information on how these variables affect students' achievement in prose Literature-in-English. The findings of this study are very significant in many ways. It has revealed why educational stakeholders should recommend less-voluminous thematically familiar prose literature texts for students as familiarity can increase comprehension and interest in prose literature.

Methodology

The descriptive research design of survey type was adopted for the study. The simple random sampling technique was utilised in selecting Oyo Central Senatorial District out of the existing three in Oyo State, 10 Local Government Areas out of the existing 11 LGAs in the senatorial district, 50 (SS) schools (five per LGA) and 2,500 SS II prose literature students (50 from each SSS). The instruments used were Texts Accessibility (r=0.84), Thematic Familiarity (r=0.86) (r=0.91), Genral Preference (r=0.93) and Prose Literature-in-English Achievement Test (r=0.81). Data collected were analysed using descriptive statistical methods, such as frequency, percentage, mean and standard deviation, Pearson Product Moment Correlation and Multiple Regression at 0.05 level of significance.

Results

Research Question 1: What relationship exists between the independent variables (texts accessibility, thematic familiarity and genral preference) and students' achievement in prose Literature-in-English?

Table 1: Correlation Matrix of the Independent variables and Students' Achievement in Prose Literature-in-English

Variables	Achievement in Prose Literature-in-English	Texts accessibility	Thematic familiarity	Genral preference
Achievement in Prose Literature-in-English	**1**			
Texts accessibility	-.147** (.000)	**1**		
Thematic familiarity	-.127** (.000)	-.054** (.007)	1	
Genral preference	.210** (.000)	-.109** (.000)	.193** (.000)	**1**
N	2500	2500	2500	2500
Mean	4.71	51.09	46.37	47.35
Standard Deviation	2.10	7.68	9.30	11.04

Source: Fieldwork 2023

Table 1 shows that genral preference had a positive significant relationship with students' achievement in prose literature (r=.210; p<0.05). This implies that the more students preferred prose genre of literature, the more their achievement in prose literature increased and vice versa. However, text accessibility (r=-.147; p<0.05) and thematic familiarity (r=-

.127; p<0.05) had a negative significant relationship with students' achievement in prose literature, implying that the two variables inversely correlated with achievement. This suggests that students who found the texts easier to access or the themes more familiar did not necessarily perform better; rather, their performance tended to decline slightly. This could imply that overfamiliarity with themes or oversimplified texts may reduce students' critical engagement, analytical depth, and motivation to study the texts rigorously; ultimately leading to lower achievement in prose literature.

Research Question 2: Is there a significant joint contribution of the independent variables (texts accessibility, thematic familiarity and genral preference) to students' achievement in Prose Literature-in-English?

Table 2: The Joint Contribution of Texts Accessibility, Thematic Familiarity, and Genral Preference to Achievement in PLE

Model 1; R =.302; R^2=.091; Adjusted R^2=.090; Std. Error of the Estimate = 1.92769						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	727.196	4	181.799	479.681	.047[b]
	Residual	947.483	2495	0.379		
	Total	1674.679	2499			

Table 2 shows that there is a significant joint contribution of the independent variables (texts accessibility, thematic familiarity and genral preference) to students' achievement in Prose Literature-in-English ($F_{(4; 2495)}$ =479.681; Adj. R^2=.091; p<0.05). This implies that the three factors, when pulled together, had a significant contribution to students' achievement in prose literature. The Adj. R^2 of 0.091 implies that 9.1% variance in students' achievement in prose literature are accounted for by the joint contribution of the three variables, while the remaining variance of 90.9% could be due to other factors not included in this model. This suggests that while the identified variables have some influence, a wide range of additional factors also play significant roles in shaping students' performance in prose literature.

Research Question 3: What is the relative contribution of texts accessibility, thematic familiarity and genral preference to students' achievement in Prose Literature-in-English?

Table 3: The Relative Contribution of Texts Accessibility, Thematic Familiarity, Genral Preference to Achievement in PLE

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	7.668	.423		18.134	.000
Access to Literary Texts	-.038	.005	-.140	7.297	.000
Thematic Familiarity	.006	.005	.024	1.147	.252

Table 3 shows that texts accessibility (Beta=-.140; p<0.05) and genral preference (Beta=.241; p<0.05) were variables that had significant relative contribution to students' achievement in Prose Literature-in-English. This implies that text accessibility and genral preference individually contributed to students' achievement. However, genral preference had

a higher relative contribution since it has a higher beta weight of .241. Therefore, it could be concluded that genral preference is the variable that could predict students' achievement in prose literature.

Discussion of Findings

Table 1 showed that genral preference had a significant positive relationship with students' achievement in prose literature while texts accessibility and thematic familiarity had a negative significant relationship with students' achievement in prose literature. By implication, if students have a high preference for prose, they would do all things possible to read, engage in, and understand the content, context and themes of prose texts as it will go a long way in impacting their achievement in prose literature. This is line with the works of Anthony (2011), Fakeye (2012), Daniel (2013) and Tevdovskaa (2016) which revealed that genral preference had a significant positive impact to students' achievement in Literature-in-English as a school subject.

Table 2 showed that the three independent variables (texts accessibility, thematic familiarity and genral preference), when pulled together, had a significant contribution to students' achievement in prose literature. This finding is similar to the study conducted.

Table 3 showed that texts accessibility and genral preference were variables that had significant relative contribution to students' achievement in Prose Literature-in-English. That is, texts accessibility and genral preference individually contributed to students' achievement. However, genral preference had a higher relative contribution and therefore, it could be concluded that genral preference is the variable that could predict students' achievement in prose literature. This finding is in line with the studies of Fakeye (2012) and Tevdovskaa (2016) that found out that genral preference had a significant positive impact on students' achievement in Literature-in-English as a school subject.

Conclusion

The study investigated the predictability of texts accessibility, thematic familiarity and genral preference on achievement in PLE among senior secondary school students in Oyo State. The study provided a better understanding of some text-based factors that could influence students' achievement in prose Literature-in-English. The study found that texts accessibility, thematic familiarity and genral preference had significant joint contribution to achievement in prose literature. Therefore, it can be concluded that text-based factors (texts accessibility, thematic familiarity and genral preference are important predictors of achievement in prose Literature-in-English.

Recommendations

Based on the findings of this study, it is recommended that parents should provide set texts in prose Literature-in-English for their wards so as to improve their achievement in prose Literature-in-English. Readers' Club should be revived in our secondary schools so that students can develop a good reading habit outside the classroom in order to aid classroom reading. Prose Literature-in-English teachers can organise debates or discussions on different aspects of prose literature to help students hone their analytical and persuasive skills.

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Artificial Intelligence and the Development of Students' Imaginative and Creative Writing in Senior Secondary Literature Curriculum

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Abstract

This study investigates how Artificial Intelligence (AI) can serve as a pedagogical resource for enhancing creative writing in the Literature classroom through the framework of Social Constructivism. This theory emphasises the importance of social interactions and collaborative learning in the development of knowledge and how students' creativity can flourish when they engage with peers and utilize AI as a tool for exploration and expression. The study employs a quasi-experimental, within-subjects design of a pre-test/post-test single-group approach. Sixteen fourth-year Language Education students at the University of Lagos, who enrolled in the course "Teaching Literature at the Senior Secondary Level," participated in the study. Students were grouped according to three literary genres and tasked with generating texts from their natural imagination before rewriting the same texts using AI tools. Comparative analysis revealed that the AI-assisted outputs demonstrated stronger cognitive organization, richer affective expression, and more refined psychomotor writing skills than those generated solely through instinct. These findings highlight the potential of AI to enhance Literature pedagogy while supporting holistic learning outcomes that are rooted in collaborative and context-driven learning experiences.

Keywords: Artificial Intelligence, Literature Pedagogy, Imaginative and Creative Writing, Cognitive, Affective and Psychomotor Domains

Introduction

The teaching of Literature-in-English at the senior secondary school level is designed to develop students' imaginative, creative, and critical abilities through reading, analysis, and writing across the three literary genres of poetry, prose, and drama. Bloom et al., 1956; Anderson & Krathwohl, 2022) ascertain that literature education goes beyond knowledge acquisition; it aims at the holistic development of learners across the cognitive, affective, and psychomotor domains of learning. In particular, creative writing tasks in Literature classes are intended to stimulate originality, nurture imaginative thinking, and enhance expressive competence (Aliyu, 2021). However, studies indicate that many students face difficulties in translating imaginative ideas into coherent and engaging texts, often producing writings that lack depth, creativity, and structural clarity (Adeniji & Ogunwale, 2020; Oyinloye, 2022).

The emergence of Artificial Intelligence (AI) has introduced new possibilities for teaching and learning. AI-powered tools such as ChatGPT, Grammarly, and QuillBot are increasingly being explored in educational contexts for their ability to support writing, enhance creativity, and expand students' linguistic repertoires (Dwivedi et al., 2023; Kasneci et al., 2023). In Literature education, According to Bai and Mintz, (2023), AI holds the potential to complement traditional pedagogy and assist students to generate imaginative content, improve stylistic quality, and overcome expressive limitations. This makes it imperative to examine how AI can be integrated into creative writing pedagogy in order to achieve curriculum objectives more effectively.

Statement of the Problem

Despite the centrality of creativity and imagination in the Literature curriculum, many students continue to struggle with producing original and engaging creative works across genres. Their writings often reveal limitations in cognitive organisation, emotional depth, and expressive skills. This makes it difficult to achieve the curriculum objective of fostering creativity across all domains of learning. Traditional approaches that rely solely on natural imagination may not be sufficient to meet the needs of today's learners in technologically dynamic environments. With the rapid rise of AI in education, there is both an opportunity and a challenge: while AI can enhance creativity and provide scaffolding for student writing, concerns remain about overdependence and the possible erosion of originality. Previous studies have examined the use of AI in language teaching, with little emphasis on its application in Literature-in-English, particularly in fostering students'

imaginative and creative writing. This study, therefore, addresses the critical question of how AI can be deployed to support, rather than replace, students' imaginative and creative writing in Literature classrooms.

Objective of the Study

The main objective of this study is to investigate how Artificial Intelligence can enhance the development of students' imaginative and creative writing skills in Literature classroom. Specifically, the study seeks to:

1. compare students' creative writing outputs produced through natural imagination and AI-assisted rewriting.
2. examine the influence of AI on the cognitive, affective, and psychomotor domains of students' literary creativity.
3. explore the pedagogical implications of integrating AI tools into Literature classrooms for achieving curriculum objectives.

Literature Review

Literature Pedagogy, Creativity, and the Three Learning Domains

At the senior secondary level, Literature is expected to cultivate students' imaginative and creative abilities across the three domains of learning: cognitive, affective, and psychomotor. The cognitive domain involves the development of ideas, organization, and originality, while the affective domain emphasizes emotional engagement and imaginative depth. The psychomotor domain is reflected in the skills of expression, fluency, and stylistic refinement in writing. These domains together provide the framework for holistic learning outcomes in Literature education (Anderson & Krathwohl, 2022). Despite this curricular emphasis, many students struggle to transform imaginative ideas into coherent and engaging texts. Research in Nigerian contexts highlights persistent challenges such as limited expressive depth, weak structural organization, and inadequate creative scaffolding in student writing (Adeniji & Ogunwale, 2020; Oyinloye, 2022). These challenges necessitate innovative approaches to support students in achieving the objectives of Literature pedagogy.

Artificial Intelligence as a Pedagogical Partner in Creative Writing

The emergence of Artificial Intelligence (AI) has introduced new possibilities for teaching and learning in the humanities. Rather than viewing AI tools solely as a threat to originality, scholars increasingly frame them as potential partners in fostering student creativity (Dwivedi et al., 2023; Kasneci et al., 2023). Generative AI platforms such as ChatGPT, Grammarly, and QuillBot provide scaffolding for idea generation, genre modeling, stylistic refinement, and iterative feedback, thereby reducing mechanical barriers and enabling students to focus on higher-order imaginative processes (Bai & Mintz, 2023). Reviews of AI in education caution, however, that its effectiveness depends on guided use, critical reflection, and "human-in-the-loop" mediation by teachers to ensure originality and creative ownership (Kasneci et al., 2023). In this way, AI is increasingly positioned as a pedagogical aid that can complement, rather than replace, the imaginative instincts of learners.

Empirical Review on AI, Creativity, and Writing

Empirical research provides growing evidence that AI can enhance students' learning and creativity when used responsibly. A recent meta-analysis of 51 studies found that AI tools such as ChatGPT have a generally positive impact on student performance, including higher-order thinking and creative outcomes, though results vary depending on task design and teacher mediation (AlAjmi & Ahmed, 2025). Similarly, experimental studies suggest that AI can improve the originality, fluency, and expressiveness of writing, particularly when students are encouraged to iteratively prompt, critique, and revise AI-generated outputs (Heaven et al., 2023).

However, some studies caution that overreliance on AI may risk homogenizing student writing, highlighting the importance of balanced integration (Zawacki-Richter et al., 2019).

In the Nigerian context, studies show that secondary and tertiary students often experience difficulty producing original and coherent literary texts without additional scaffolding (Okunade, 2021; Ogunyemi & Adeyemo, 2022). Although technology integration in Literature classrooms is still limited, recent work argues for the adoption of digital and AI-supported tools to enrich creative writing pedagogy and support learners in achieving curriculum goals (Adeniji & Ogunwale, 2020; Oyinloye, 2022). Despite this, there is little empirical evidence on how AI can be systematically applied to genre-based creative writing tasks in African contexts.

Theoretical Framework

This study is grounded in Social Constructivism, a theoretical framework that emphasises the importance of social interactions and collaborative learning in the development of knowledge and creativity. According to this theory, students construct their understanding and skills through meaningful interactions with peers and educators, which can be significantly enhanced by the integration of AI tools. It acknowledges the role of social context in learning, hence, this framework supports the idea that AI can facilitate collaborative writing experiences and allow students to engage with diverse perspectives and refine their creative expressions. Furthermore, Social Constructivism aligns with the study's aim to explore how AI can scaffold the creative writing process and fosters an environment where students can thrive in their imaginative endeavors while simultaneously meeting the demands of the Literature curriculum.

Research Gap

The reviewed literature indicates that AI can strengthen the cognitive domain by improving the organization and clarity of ideas, enrich the affective domain by deepening imaginative expression, and refine the psychomotor domain by enhancing writing style and fluency. However, most studies are either exploratory or situated in Western contexts, with limited attention to African Literature classrooms. Furthermore, few studies adopt within-subjects designs that compare natural and AI-assisted writing across the three literary genres. This study addresses this gap by engaging pre-service teachers in a University of Lagos, Nigeria, to examine how AI tools can enhance imaginative and creative writing in poetry, prose, and drama.

Methodology

This study adopted the quasi-experimental, within-subjects design, by employing a single-group pre-test/post-test approach. The design was appropriate because the same participants completed creative writing tasks twice: first through natural imagination and later by enhancing their texts with Artificial Intelligence (AI) tools. This allowed for direct comparison of outputs across the two conditions without the need for random assignment or control groups, which are not always feasible in educational contexts (Creswell & Creswell, 2018).

The participants comprised sixteen

Language Education at the University of Lagos. They were enrolled in the course *Teaching Literature at the Senior Secondary Level* during the 2024 academic session. The students were selected because the course explicitly trains pre-service teachers to teach Literature in secondary schools. This provides a suitable context for exploring how AI can support the curriculum objective of fostering imaginative and creative writing skills.

Two key instruments were employed:

1. **Creative Writing Tasks** – Students were grouped into the three literary genres (poetry, prose, and drama) and assigned tasks that require them to produce original texts using natural imagination.
2. **AI Tools** – After completion of the initial writing, students were asked to rewrite or enhance their texts using AI-powered platforms such as ChatGPT and Grammarly. These tools were chosen for their capacity to generate, refine, and expand creative writing outputs (Kasneci et al., 2023).

The study was conducted in three phases:

1. **Orientation Phase** – Students were introduced to the objectives of the exercise and provided with guidance on responsible use of AI tools in creative writing.
2. **Natural Writing Phase (Pre-test)** – Each group produced creative texts in poetry, prose, or drama based solely on natural imagination and instinct.
3. **AI-Assisted Writing Phase (Post-test)** – Students then revisited the same texts, enhancing them with AI tools. Care was taken to ensure students engaged with the AI outputs critically, modifying suggestions to align with their own ideas.

The natural and AI-assisted texts were subjected to comparative analysis using qualitative content evaluation and simple descriptive comparison. The evaluation focused on three domains of learning:

- **Cognitive** – organization, clarity, and originality of ideas.
- **Affective** – imaginative depth, emotional expression, and engagement.
- **Psychomotor** – writing skills, including stylistic refinement, accuracy, and fluency.

Judgments were made by the course instructor and triangulated with peer assessment to ensure fairness and credibility. The findings were then synthesized to highlight differences in creativity and imagination between the two conditions.

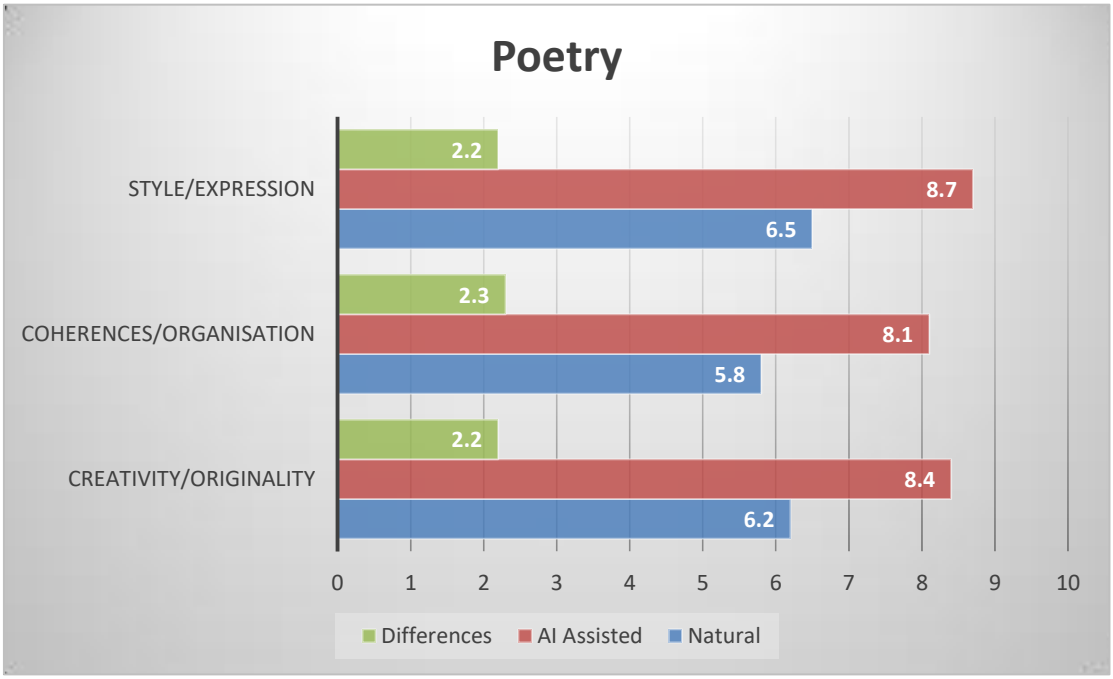
Results

The study compared students' natural and AI-assisted creative writing across poetry, prose, and drama using a three-dimensional rubric: **creativity**, **coherence**, and **style** (each scored on a 5-point scale, where 1 = very weak, 5 = excellent). Sixteen students' works were evaluated (n = 5 for poetry, n = 6 for prose, n = 5 for drama).

Quantitative Results Table 1. Comparative Scores of Natural vs. AI-Assisted Writing (N=16)

Genre	Dimension	Natural Writing (Mean)	AI-Assisted Writing (Mean)	Difference
Poetry	Creativity/Originality	6.2	8.4	+2.2
	Coherence/Organization	5.8	8.1	+2.3
	Style/Expression	6.5	8.7	+2.2
Prose	Creativity/Originality	6.7	8.5	+1.8
	Coherence/Organization	6.0	8.2	+2.2
	Style/Expression	6.3	8.6	+2.3
Drama	Creativity/Originality	6.4	8.3	+1.9

Figure 1: Comparison of Natural vs. AI-Assisted Mean Scores



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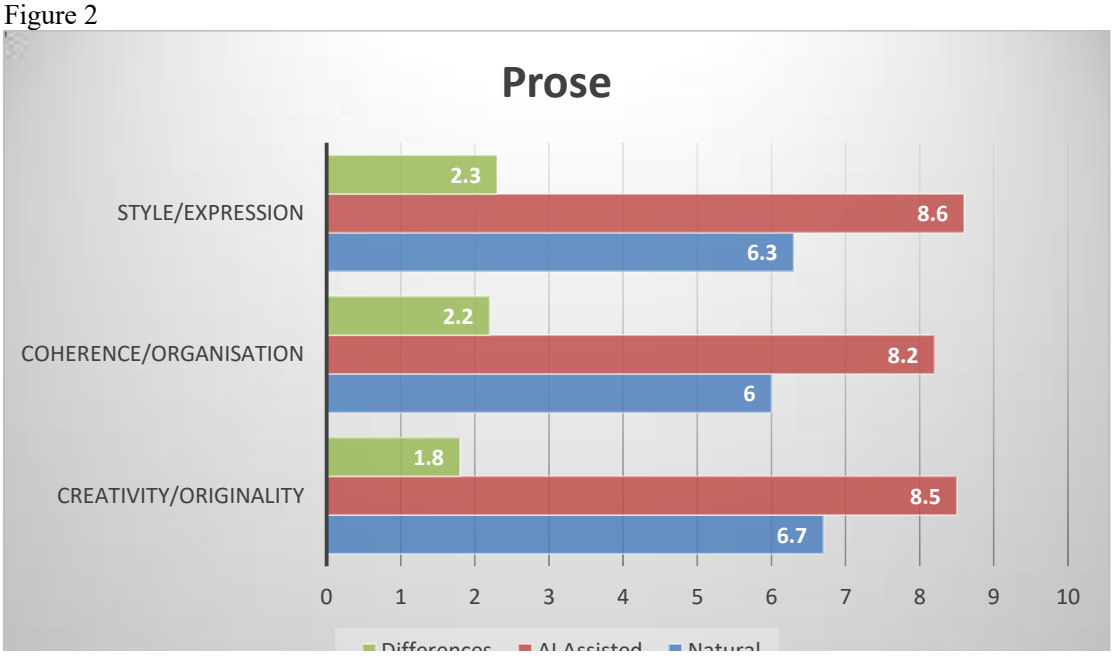

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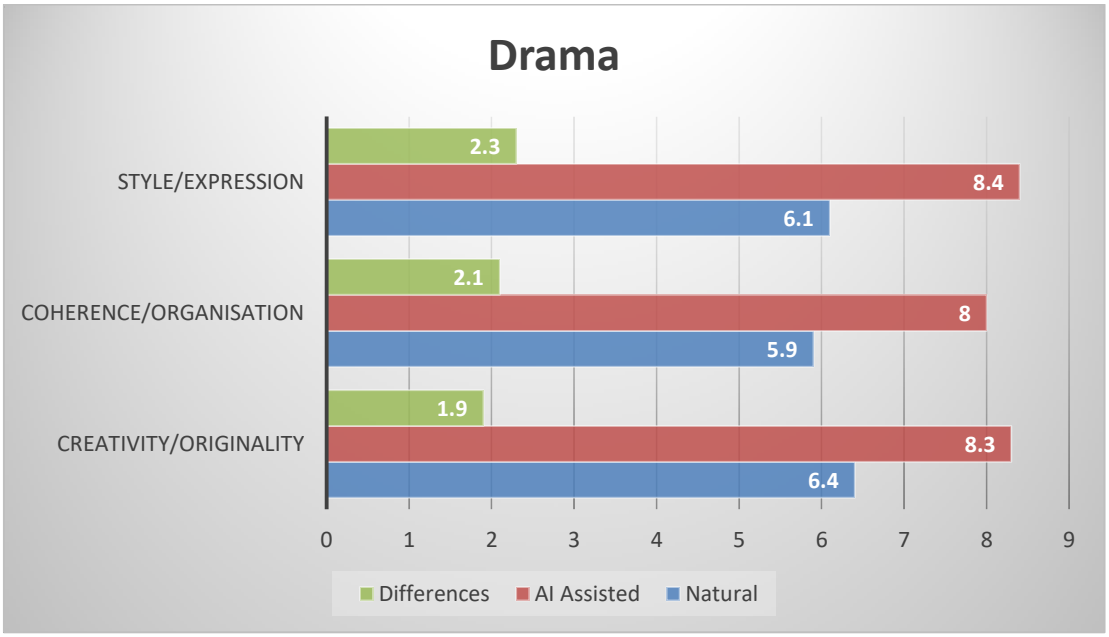

: Comparison of Natural vs. AI-Assisted Mean Scores

Qualitative Results

Poetry: Natural poems displayed genuine personal imagery but often lacked metaphorical richness and structural coherence. AI-assisted rewrites added layered imagery, rhythm, and diction. The average creativity scores rose.

Prose: Natural narratives were straightforward and sometimes flat in emotional tone. AI-assisted rewrites offered richer descriptions and dynamic plots. This improves coherence and style.

Drama: Natural scripts contained minimal stage directions and plain dialogue. AI-assisted versions integrated expressive dialogue and performance cues, boosting creativity.

Overall Comparison

Across all genres, AI-assisted writing demonstrated higher scores in creativity, coherence, and style compared to natural instinct writing. The improvement was most pronounced in **prose**, where richer narrative and characterization significantly elevated affective depth and cognitive organisation.

Discussion

The findings of this study provide compelling evidence that Artificial Intelligence (AI) tools can significantly enhance students' imaginative and creative writing in Literature classroom. The comparative analysis showed that across all three genres: poetry, prose, and drama; AI-assisted outputs scored consistently higher in creativity, coherence, and style than those produced solely through natural imagination. For example, mean creativity scores increased from 6.2 in natural poetry to 8.4 in AI-assisted poetry, while prose improved from 6.7 to 8.5. These results underscore the potential of AI as a complementary pedagogical tool in achieving the holistic objectives of Literature education.

From a cognitive perspective, AI-assisted writing helped students to better organise ideas, refine their use of literary devices, and improve overall textual coherence. This aligns with Alqarni (2021), who noted that AI scaffolds learning and

On the affective domain, AI enhanced the emotional appeal of students' works,

particularly in prose and drama, where narratives and dialogues gained more expressive depth. This resonates with Nyarko (2023), who observed that AI prompts can elicit stronger personal engagement and empathy in creative writing tasks.

In the psychomotor domain, although writing is often considered less physically active, the refinement of stylistic choices, layout, and performance-oriented features in drama (e.g., stage directions) illustrates how AI sharpened students' applied writing skills. This suggests that AI can help bridge the gap between abstract imagination and tangible literary expression.

These findings support recent scholarship emphasizing AI's role in augmenting human creativity rather than replacing it (Floridi & Chiriatti, 2020; Holmes, 2022). While natural instinct remains central to fostering originality, AI tools provided scaffolding that elevated students' ideas into more polished and sophisticated forms. Importantly, this reflects the constructivist view of learning, where students co-create knowledge with the aid of technological mediation.

Overall, the study demonstrates that integrating AI into Literature pedagogy not only enhances creativity but also aligns with the broader educational mandate of developing students holistically across cognitive, affective, and psychomotor domains.

Conclusion

This study explored how Artificial Intelligence (AI) tools can be harnessed to enhance imaginative and creative writing skills in Literature education at the senior secondary level. It compares texts written through natural imagination and those rewritten with AI assistance across poetry, prose, and drama, the results revealed that AI integration significantly improved students' creativity, coherence, and stylistic refinement. These outcomes demonstrate that AI can serve as a valuable complement to traditional pedagogy in fostering students' literary competence while addressing all three domains of learning (cognitive, affective, and psychomotor).

The study concludes that AI does not diminish the role of human imagination; rather, it amplifies and channels it into more expressive and structured forms. In doing so, AI offers literature teachers innovative opportunities to achieve the long-standing objective of nurturing imagination and creativity in students.

Recommendations

1. Literature educators at both tertiary and secondary levels should incorporate AI tools into creative writing activities to scaffold students' imaginative outputs.
2. Curriculum planners should integrate digital literacy and AI-supported writing practices into Literature pedagogy to prepare students for evolving literary landscapes.
3. Professional development workshops should be organised to equip teachers with the skills to effectively blend natural creativity with AI-assisted techniques.
4. Future research should expand the sample size across institutions and explore long-term effects of AI-assisted writing on students' literary competence and originality.

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Reinforcing Bilingual Education Through Literacy Curriculum and Artificial Intelligence

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Abstract

This paper explores the intersection of bilingual education, literacy curriculum, and artificial intelligence (AI) in today's dynamic educational landscape. With the rise of multilingual classrooms and the increasing global demand for bilingual competence, there is a pressing need to redesign literacy instruction to reflect linguistic diversity. This study highlights how integrating AI tools such as language learning applications, speech recognition technology, adaptive reading platforms, and real-time translation into the literacy curriculum can enhance bilingual teaching and learning outcomes, particularly in multilingual contexts such as Nigeria. The paper argues that when AI is properly aligned with educational goals, it can support personalised bilingual instruction, facilitate engagement with both the mother tongue and official languages, and provide data-driven insights for curriculum development. It also addresses challenges such as digital access gaps, inherent AI biases, and the necessity for teacher readiness. The study adopts a theoretical analysis approach supported by empirical examples and current literature. By showcasing practical strategies and emerging trends, this paper invites educators, curriculum planners, and policymakers to consider how AI-enhanced literacy instruction can serve as a powerful tool for strengthening bilingual education and promoting inclusive, future-ready learning environments.

Keywords: Bilingual education, Literacy curriculum, Artificial intelligence, Digital learning

Introduction

In an increasingly multilingual and technologically driven world, the demand for effective bilingual education has never been more pertinent. Bilingual education refers to formal instruction in two languages, typically a learner's native or heritage language and a second language of wider communication such as English. In countries like Nigeria, where over 500 languages are spoken, the implementation of bilingual literacy programmes offers not only cognitive and linguistic benefits but also serves as a crucial tool for educational inclusion, national development, and cultural preservation (Bamgbose, 2011).

Literacy is the ability to read, write, and comprehend texts, it's at the core of any educational system. Literacy instruction becomes even more complex when delivered in more than one language, particularly where students' first language (L1) differs from the language of instruction (L2). Bilingual literacy curricula must therefore be culturally responsive, linguistically inclusive, and pedagogically sound. However, traditional instructional models are often ill-equipped to address the personalised needs of bilingual learners, particularly in under-resourced classrooms (Owolabi, 2022).

Recent advancements in Artificial Intelligence (AI) have introduced new possibilities for education. AI-powered tools such as intelligent tutoring systems, language processing models, and adaptive learning platforms offer personalised, data-driven, and interactive learning experiences (Wang & Sun, 2024). In the context of bilingual education, AI can facilitate multilingual content delivery, support automatic translation, adapt learning materials to students' proficiency levels, and

Despite its potential, many educational institutions in developing nations, including Nigeria, have yet to fully leverage AI technologies to improve bilingual literacy outcomes. Challenges such as limited access to digital tools, lack of teacher training in AI literacy, and the absence of policy frameworks

have impeded progress. Few studies have examined how AI can be adapted to support bilingual education in culturally and linguistically diverse contexts, making this investigation timely and relevant.

Objectives of the Study

This paper seeks to:

1. Examine how AI can reinforce literacy curriculum design for bilingual education.
2. Identify challenges and ethical concerns in AI integration within bilingual literacy contexts.
3. Explore global and Nigerian experiences of AI-assisted bilingual learning.
4. Recommend strategies for effective and ethical AI adoption in bilingual literacy programmes.

Research Questions

1. How can AI support and enhance bilingual literacy curriculum implementation?
2. What challenges and ethical issues accompany AI integration in bilingual education?
3. What global models or case studies inform AI-based bilingual literacy practices?
4. What policies and teacher development strategies are required for sustainable implementation in Nigeria?

Methodology

This paper adopts a theoretical-conceptual analysis approach, drawing upon current literature from academic journals, institutional reports, and international policy documents published between 2016 and 2024. Sources were selected based on their thematic relevance to bilingual education, literacy curriculum, and AI in education. The study synthesises theoretical frameworks such as Cummins' Common Underlying Proficiency (2000), Vygotsky's Sociocultural Theory (1978), and García and Wei's Translanguaging Theory (2014) to derive insights and propose practical strategies. Empirical examples from multilingual contexts including Nigeria, South Korea, and the United States are integrated to strengthen applicability.

Literature Review

Theoretical Foundations of Bilingual Education

Bilingual education draws upon several linguistic and cognitive theories that highlight how learners acquire and use multiple languages. Cummins' (2000) Dual Iceberg Theory suggests that while two languages may appear separate at the surface level, they share a common underlying proficiency (CUP). This implies that literacy and cognitive skills developed in one language can transfer to another. Vygotsky's (1978) Sociocultural Theory complements this by asserting that learning occurs through social interaction and is mediated by cultural tools, including language. In bilingual classrooms, these theories justify instructional strategies that value both L1 and L2 as vehicles for knowledge construction.

Historical Evolution of Literacy Instruction

The history of literacy instruction has evolved from rote memorisation and phonics-based models to more balanced and meaning-oriented approaches. Freire's (1970) theory of critical literacy redefined reading as a social act of empowerment, where learners analyse, question, and transform their realities through text. Modern literacy curricula, especially in multilingual contexts, must integrate these principles to promote comprehension, critical thinking, and identity formation.

Literacy Curriculum and Bilingualism

An effective literacy curriculum is a structured framework encompassing reading, writing, listening, and speaking, aligned to learners' linguistic and cultural contexts (Snow & Matthews, 2016). In bilingual education, literacy instruction must simultaneously develop proficiency in both languages. García and Kleifgen (2020) emphasise dynamic bilingualism, where learners use both

languages fluidly to make meaning. This contrasts with traditional models that isolate languages. Hence, bilingual literacy curricula must promote translanguaging, critical literacy, and cultural relevance to sustain learners' engagement.

Cognitive and Academic Benefits of Bilingualism

Research consistently shows that bilingualism enhances cognitive flexibility, metalinguistic awareness, and executive functioning (Bialystok, 2021). Bilingual learners exhibit superior problem-solving and multitasking abilities. Academically, they perform better in reading comprehension and analytical reasoning due to strengthened neural processing pathways across languages (Thomas & Collier, 2020). Therefore, integrating bilingualism within the literacy curriculum provides learners with a long-term intellectual advantage.

AI Integration in Bilingual Literacy Curriculum

Global Developments

AI's role in literacy education has grown exponentially, with innovations like adaptive reading platforms, intelligent writing assistants, and speech recognition technologies. In the United States, AI-based tools such as Lexia Learning and Amira personalise literacy instruction and support Spanish-English bilinguals through real-time assessment (Kulik & Fletcher, 2019). In South Korea, AI-assisted writing tools enhance grammatical accuracy among English learners (Lee et al., 2022). In Africa, tools such as RoboTutor and Mavis Talking Books provide speech-based literacy learning for multilingual children (Oladosu & Olagunju, 2021).

The Nigerian Context

In Nigeria, AI adoption in education remains limited by infrastructural deficits and teacher training gaps. However, government initiatives such as the 3 Million Technical Talent (3MTT) programme aim to build digital skills that support AI literacy. AI-powered reading tools could bridge gaps in multilingual instruction, especially in rural schools where teacher shortages are acute. By integrating AI into bilingual literacy curricula, Nigeria can promote equitable access to quality education and preserve indigenous languages.

Pedagogical Applications

AI supports bilingual literacy through:

Personalised Learning: Adaptive systems tailor tasks based on learner proficiency.

Speech Recognition: Supports pronunciation and reading fluency in both L1 and L2.

Text-to-Speech Tools: Aid struggling readers and visually impaired learners.

Gamification: Enhances motivation and engagement through interactive tasks.

Data Analytics: Provides feedback to teachers for targeted interventions.

Challenges and Ethical Considerations

1. Digital Infrastructure Gaps: Poor internet connectivity and lack of devices impede AI adoption, particularly in rural schools (Ajayi, 2022).
2. Teacher Competence: Most teachers lack AI literacy and training in digital pedagogy, limiting classroom implementation (NERDC, 2023).
3. Language Inequality: AI systems are primarily trained on dominant global languages, marginalising indigenous languages (Adegbite, 2019).
4. Ethical Risks: Data privacy, algorithmic concerns. Children's data must be protected under strict ethical guidelines (UNESCO, 2021).
5. Socioeconomic Barriers: Economic inequalities affect access to digital devices, further entrenching educational disparities.

Policy and Pedagogical Implications

Policy Reform

Nigeria's National Policy on Education should explicitly include digital and AI competencies within the literacy curriculum. Bilingual literacy programmes must incorporate AI tools designed for both indigenous and official languages. Policy should also encourage partnerships between government, academia, and the private sector to develop ethical AI frameworks.

Teacher Training and Professional Development

Teacher capacity-building is critical. Pre-service and in-service training should include modules on AI integration, digital literacy, and bilingual pedagogy. Collaboration between the Nigerian Educational Research and Development Council (NERDC), the National Teachers' Institute (NTI), and technology firms can support this goal.

Infrastructure Development

Public-private partnerships (PPPs) can address infrastructure gaps by providing schools with affordable internet connectivity, devices, and access to AI learning platforms. Funding should prioritise underserved schools and promote sustainability.

Inclusive and Ethical Design

AI applications must be designed to reflect local cultures, languages, and contexts. Local linguists and educators should be consulted during development to ensure linguistic inclusivity and gender sensitivity.

Conclusion

The synergy between a robust literacy curriculum and artificial intelligence holds immense potential for reinforcing bilingual education. In a linguistically diverse country such as Nigeria, AI can bridge educational inequalities by supporting biliteracy, promoting inclusivity, and improving learning outcomes. However, sustainable implementation demands adequate infrastructure, teacher readiness, and ethical safeguards. Integrating AI into bilingual literacy curricula requires a human-centred, context-sensitive approach that values both technology and cultural heritage. By doing so, Nigeria can pioneer a model of bilingual education that is both technologically advanced and socially inclusive.

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Fostering Language Identity and Attitude through Artificial Intelligence: The Nigerian Indigenous Language Experience

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Abstract

This paper addresses how Artificial Intelligence (AI) technologies may be applied to foster positive language identity and attitudes towards indigenous languages in Nigeria. While previous studies have focused more on conventional classroom practices and policy implementation, this study explores a newer trend by focusing on AI-based technologies such as language learning software, voice recognition applications, and digital narrative tools. Drawing on extant empirical literature, this paper examines the ways in which AI can facilitate the revival of minority languages, build learners' confidence in using their mother tongue, and reframe perceptions of linguistic value. This study adopted a narrative review methodology, gathering data from published literature, policy recommendations, and recorded internet interventions linked to Yoruba, Igbo, and Hausa. The study also takes into account problems, such as restricted technical access, unequal digital infrastructure, and the possibility of perpetuating linguistic hierarchies through biased algorithm design. Findings from the reviewed literature show that AI tools such as speech recognition, translation systems, and chatbots are being used to promote engagement and pride in Yoruba, Igbo, and Hausa. Culturally relevant AI applications were found to strengthen identity and improve attitudes toward indigenous languages, especially among young users. However, there are challenges in addressing issues such as technological bias, limited access, and the risk of favouring dominant languages over minority ones. The paper concludes with recommendations to educators, developers, and policymakers on integrating AI in ways that promote linguistic identity and equity in Nigeria.

Keywords: Language identity, Language attitude, Artificial intelligence, Indigenous languages, Digital learning.

Introduction

Digital tools are changing the way people learn and interact with language. Artificial intelligence (AI) is becoming a major part of this shift, especially through mobile applications, virtual assistants, and automatic speech systems (Aryanti & Santosa, 2024; Fitria, 2021). In the area of language learning, these tools now offer support that goes beyond textbooks (Aryanti & Santosa, 2024). Learners can receive instant correction, hear proper pronunciation, and practise speaking with AI-powered feedback (Abimanto & Sumarsono, 2024). Akpabio et al. (2025) explain that AI in language education is growing fast because it supports personalised learning and helps with speech recognition. This change is happening around the world, including in Africa, where young people rely greatly on mobile technology for education and communication.

Language is a deep part of how people understand themselves and others (Alejandro, 2024). It is one of the ways individuals build their identity and relate to the world around them. Scholars such as Haruna (2017) and Ofodu (2014) have written about how language loss affects cultural memory and weakens personal connection to history. In Nigeria, many children and young adults now grow up without learning their mother tongue well (Omogho, 2021). Even though Yoruba, Igbo, and Hausa are still spoken widely, they are being used less in education, media, and public spaces (Olawe, 2022). The value placed on English makes many people feel that their local language is less useful. Studies by Okoro (2022) and Olawe (2022) have shown that some young people feel ashamed or reluctant

There have been attempts to promote indigenous languages through education policies. The Nigerian National Policy on Education encourages the use of the mother tongue in early primary education and the learning of one major Nigerian language in secondary school (Federal Republic of Nigeria [FRN], 2013). However, the application of this

policy remains weak. In many schools, especially private ones, English is the only language used (Obiakor, 2024). Parents also tend to support English at home because of its status in the job market. Oludare and Olatunji (2024) found that some parents even discourage their children from speaking indigenous languages to improve their English fluency. As a result, language pride is dropping, especially among school-aged children.

Digital tools now play a large role in how people learn and use language. Most young Nigerians today use phones and other smart devices. They chat, watch videos, and learn through digital platforms. However, many of the tools they use are not built to support indigenous languages. Most applications do not include Yoruba, Igbo, or Hausa options (Umar et al., 2025). This lack of representation adds to the idea that local languages are less important. Eke and Adeyemi (2024) argue that when a language is missing from digital spaces, users begin to see it as limited or outdated. AI systems that recognise only English or foreign accents do not support the everyday speech patterns of Nigerian users.

Artificial intelligence may offer new ways of reversing this problem. If AI tools are built with local languages in mind, they can help people use and hear their language in new spaces (Jafari, 2023). This may increase confidence, reduce shame, and support positive identity. Still, using AI for language learning in Nigeria may come with challenges. Many tools are not yet adapted to local languages because there is not enough digital data to train them (Inuwa-Dutse, 2025). Okoronkwo (2024) warns that when algorithms are trained on limited or biased data, they often ignore minority groups. This can lead to tools that do not recognise African voices or treat them as errors. There are also issues of access. Rural communities may also lack reliable electricity, internet access, or digital literacy (Okocha & Edafewotu, 2022). This can create a digital gap, meaning that even well-designed tools may not reach those who need them most.

This paper focused on how artificial intelligence can be used to support indigenous language learning and identity among Nigerians. It drew on current literature, public interventions, and AI-based projects involving Yoruba, Igbo, and Hausa. The choice of these three languages was guided by their national spread, established orthographies, and the relative availability of digital and linguistic data, which make them more visible in AI development projects. Minority languages were not included because most lack adequate digital documentation and standardised linguistic resources, limiting their representation in AI-based research and applications. The selection therefore provided a practical framework for assessing how AI influences language identity and attitudes within Nigeria's broader multilingual context. The aim was to explore how these tools may influence the way people feel about their language, how they use it, and how others perceive them when they do. It also examined the risks of using technologies that may continue to favour dominant languages or leave others out.

Research Questions

The following research questions guided the study:

1. How are AI tools being used to support learning and daily use of indigenous Nigerian languages?
2. In what ways does AI influence users' [illegible] Nigerian languages?
3. What technical and social barriers affect the use of AI for indigenous language support in Nigeria?

Methodology

This study used a narrative review approach to explore how artificial intelligence can support indigenous language identity and attitude in Nigeria. A narrative review allows

for the collection and interpretation of data from a wide range of secondary sources, including published research, policy reports, media content, and digital project documentation (Sukhera, 2022). Ferrari (2015) describes this method as useful for fields where knowledge is emerging and not yet well organised. Since the application of AI to indigenous language development in Nigeria is still developing and scattered across various sources, the narrative review approach is appropriate for identifying patterns, tools, and concerns in existing literature and projects.

The data for this study came from several sources. Peer-reviewed academic journals were used to establish the theoretical and empirical background on AI and language identity. In addition, data was drawn from government policy documents such as the National Language Policy (Nigerian Educational Research and Development Council [NERDC], 2022), which address language use in schools and in the nation as a whole. Online reports and websites of technology projects were also reviewed. These include local innovations such as Intron Health, a Nigerian AI health start-up that uses machine learning for voice recognition and has expressed interest in local language input.

Only materials that focused on the connection between artificial intelligence and language were selected. The main inclusion criteria were: the material must address AI in the context of language education, cultural preservation, or identity; it must be relevant to the Nigerian or broader African context; and it must contain reference to Yoruba, Igbo, or Hausa where possible. The study only included materials written in English to allow for accessibility and consistency during analysis.

All sources were read thematically. The content was grouped into five main focus areas: language identity, language attitude, technological access, digital representation, and cultural sensitivity. These focus areas were selected based on recurring concerns in the literature and the aim of this study. This method allowed for a clearer understanding of how AI tools are being used, how they are received by users, and what risks or limitations they present.

Findings

A total of fourteen sources, including peer-reviewed journal articles, national policy document, and project reports, were reviewed to identify how artificial intelligence tools are contributing to language identity and attitude among Nigerian users. The studies were selected based on their relevance to AI use in indigenous language learning, cultural preservation, digital access, and public engagement. Most of the sources focused on Yoruba, Igbo, and Hausa, with particular attention to how AI tools are being used to support learning, promote cultural pride, and expand public use of local languages. While the studies show encouraging outcomes in terms of engagement and identity formation, they also reveal limitations such as data scarcity, accent bias, and poor infrastructure in rural areas. Following a thematic analysis, the findings revealed four key themes based on patterns across the sources. They include: AI tools for indigenous language engagement, identity formation through digital interaction, changing attitudes towards local languages, and risks and gaps in implementation.

AI Tools Relevant to Indigenous Language Engagement

Three studies and project reports were identified relating to the use of AI tools in promoting engagement with indigenous Nigerian languages. These sources describe how AI technologies are being developed to support the learning and daily use of languages such as Yoruba, Igbo, and Hausa. The first report by *Techcabal* (2025) outlines efforts by startups like Intron Health, Spitch AI, and Awarri, which are building voice recognition systems, speech-to-text services, and large language models designed for African languages. The second report from

BusinessDay (2025) focuses on EqualyzAI, a company using AI to support language interaction through tools like Afro-SLM, which learns from natural language input and serves practical purposes such as voice-based farming advice in Hausa. The third study by Aremu (2024) explores the potential of AI-powered chatbots for learning endangered Nigerian languages. These chatbots are described as capable of processing tone, syntax, and providing interactive feedback to aid language learning.

Identity Formation through AI Tools

Five studies describe how artificial intelligence tools support identity formation among Nigerian users, especially young people. These sources show that when AI applications include local languages and cultural elements, they help users connect with their heritage. Oveh et al. (2025) describe AI tools that give users access to indigenous languages and cultural symbols, making cultural identity more visible and accessible. Ndubisi (2024) explains that AI can support the personal and collective experience of cultural heritage when used with an understanding of local traditions. Haruna et al. (2025) show how AI is being used to promote Hausa language, literature, and culture through machine translation and digital content. Das et al. (2022) report that speech and text-based AI tools can help preserve cultural heritage through language technology. Essien et al. (2024) found that students in Nigerian universities engage more with AI tools when the content reflects their culture, which supports language pride and connection.

Changing Attitudes towards Local Languages

Five sources show that artificial intelligence tools can influence how Nigerians perceive and use their indigenous languages. Agunlejika (2025) explains that AI-based news translation systems help rural communities access news in their own languages, encouraging the public use of local languages in civic discussions. Atakiti and Ahanotu (2024) found that content creators in Lagos advertising agencies show positive attitudes toward using AI tools, although actual adoption remains limited. This shift in attitude signals growing acceptance of AI as a tool for local expression. The National Language Policy (NERDC, 2022) also supports the use of Nigerian languages in digital communication, including online education and ICT platforms, reinforcing their relevance in modern settings. Aremu (2024) reports that AI-powered chatbots can increase learners' interest in indigenous languages by making them more accessible and engaging. Finally, Alsaawi et al. (2025) show that users, especially younger ones, are open to using AI chatbots for language learning, indicating that digital platforms may help reshape how people value and use their mother tongue.

Risks and Gaps in Implementation

Four studies identified key limitations affecting the fair and effective use of AI for indigenous language support in Nigeria. Haruna et al. (2025) report that existing AI tools for Hausa suffer from limited and unrepresentative datasets, which reduce the accuracy and cultural sensitivity of applications such as translation and speech recognition. The National Language Policy (NERDC, 2022) recognises the need for equitable access to digital information in Nigerian languages but notes that such access remains uneven. Azizov (2023) highlights how AI models often misinterpret non-standard

speakers of minority languages and reinforces digital exclusion. Dosumu (2024) adds that rural communities in Nigeria face major infrastructure challenges, including unstable electricity and poor internet connectivity, which block access to AI tools and widen the digital divide.

Discussion

The use of AI tools in supporting engagement with indigenous Nigerian languages shows progress, but their actual influence is uneven and sometimes overstated. The projects described by *Techcabal* (2025), such as voice recognition systems by Intron Health and speech-to-text tools by Spitch AI, suggest that AI is beginning to accommodate local languages like Yoruba, Igbo, and Hausa. Similarly, Aremu (2024) highlights chatbots designed for learning endangered languages. However, these efforts often operate within limited scopes and audiences. Most are pilot projects, with minimal data on user reach, retention, or linguistic impact. While EqualyzAI's Afro-SLM tool, as discussed in *BusinessDay* (2025), demonstrates the technical possibility of learning from natural language input, it is not yet clear how deeply it supports sustained language use. Studies such as Bosch et al. (2023), working with similar projects in South Africa, found that AI tools developed without strong community engagement could lead to moral panic to be underused or quickly abandoned. Therefore, while current Nigerian initiatives show potential, stronger evidence is needed to confirm their influence beyond initial experimentation.

Discussions around AI and identity formation often present the technology as a gateway to cultural reconnection. Oveh et al. (2025) and Ndubisi (2024) describe how access to AI platforms that incorporate indigenous symbols and languages can help users form stronger links with their cultural background. Haruna et al. (2025) offer further support, noting that AI-facilitated promotion of Hausa culture and literature contributes to a sense of shared identity. These studies align with international research such as Tan et al. (2024), who argues that technology can support minority language revitalisation when tools are grounded in local contexts. However, there are valid doubts about whether digital access alone is enough to shape or strengthen identity. For instance, Darwin and Evizariza (2024) argue that language identity is not simply about access but about usage in meaningful social spaces. Das et al. (2022) describe language preservation through speech and text technologies, yet the extent of user interaction and motivation is left unexplored. Additionally, the control of AI content by commercial actors may reduce its cultural depth. Siliutina et al. (2024) notes that digital representations often flatten complex traditions, which can lead to a generic rather than authentic engagement. This shows that while AI may support cultural identity in some contexts, it can also simplify or distort it if not carefully developed with community input.

The shift in attitudes towards local languages through AI-based platforms reflects a growing awareness, but the transition from awareness to action is not guaranteed. Agunlejika (2025) discusses AI tools that translate news into indigenous languages, helping rural populations engage with current events. Aremu (2024) also shows that learners find AI-powered chatbots more engaging when they use local languages. This positive trend is echoed by Sun and Xu (2024), who note that learner autonomy increases when language tools offer personalised and culturally relevant content. Yet, other findings challenge the idea that AI tools automatically lead to behavioural change. Atakiti and Ahanotu (2024) found that while Lagos-based advertisers expressed positive views towards using AI in local languages, very few actually incorporated these tools in their creative work. This reflects what Obiegbu (2015) identified as deep-seated prestige issues, where English still dominates both formal and informal communication. Although the National Language Policy (NERDC, 2022) promotes digital use of local languages, implementation depends heavily on institutional support, which remains weak (Umar et al., 2025). Without deliberate reinforcement through education, media, and policy, AI tools may only support superficial shifts in attitude without broader adoption.

The challenges facing the effective use of AI in supporting indigenous languages are serious and extend beyond technology. Haruna et al. (2025) describe how Hausa language tools struggle due to insufficient and poor-quality datasets. These limitations are not unique to Nigeria. Bella et al. (2024) have shown that many language models exhibit bias because their training data largely ignores under-resourced languages. Azizov (2023) draws attention to voice recognition failures for non-standard accents, which reinforces digital inequality. Dosumu (2024) adds that unstable electricity and weak internet access further restrict rural participation, especially in the Nigerian context. These structural barriers echo concerns raised by Nchake and Shuaibu (2022), who observed that ICT development in Africa often deepens existing divides unless matched with investment in local infrastructure and training. Although the National Language Policy (NERDC, 2022) identifies the need for equitable access, there is no clear evidence of ongoing public strategies to address these gaps. This leaves much of the work to private actors or international donors, which creates inconsistencies in coverage, sustainability, and relevance. Therefore, unless these structural and policy challenges are addressed, AI tools will continue to serve a limited section of the population, while excluding those most in need of linguistic support.

Limitations of the Study

This study is limited by its reliance on secondary sources, which restricts the depth of engagement with users of AI tools and local language platforms. Without primary data, such as interviews or user feedback, the findings depend on how existing studies report impact, which may be selective or lack detail. The narrative review approach also makes it difficult to measure consistency across sources, especially when evaluating informal projects or media reports that are not peer-reviewed. In addition, the focus on English language materials may have excluded relevant works published in local languages or alternative platforms. These limitations affect the completeness of the evidence and call for further empirical research involving direct user perspectives and local communities.

Implications

The study shows that artificial intelligence can support indigenous language visibility, learning, and cultural identity in Nigeria, but only when issues of access, representation, and design are addressed. This has clear implications for policymakers, educators, and developers. For policymakers, the findings call for stronger support for digital language inclusion through funding, curriculum integration, and infrastructure. For educators, there is a need to adopt AI tools that reflect students' linguistic backgrounds, as this can improve engagement and identity connection. Developers must also recognise the risks of bias and underrepresentation, ensuring that local languages are treated as active, usable resources in AI systems. Without such efforts, digital tools may widen existing inequalities rather than close them.

Conclusion

This research has explored how artificial intelligence is influencing the visibility, use, and perception of indigenous languages in Nigeria. Drawing from secondary studies and reports, it has shown that AI tools such as chatbots, speech systems, and translation models are beginning to support language engagement, identity connection, and changing attitudes among tech-aware users. However, the study also highlights major challenges, including technical bias, poor infrastructure, and limited datasets for Nigerian languages. While some users benefit from these tools, many are excluded due to design and access issues. The findings suggest that for AI to genuinely support indigenous languages, there must be conscious investment in inclusive design, local content development, and infrastructure. Without these, the use of AI

may continue to favour dominant languages and reinforce existing digital divides.

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The Application of Artificial Intelligence in Language Translation: Advancing Multilingual Education and Communication

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Abstract

This paper explores the integration of AI-driven translation technologies—including neural machine translation (NMT) and natural language processing (NLP)—and evaluates their implications for the teaching of the Yorùbá language. Through case studies in educational settings, the paper highlights how AI-assisted translation can foster real-time learning, support bilingual instruction, promote linguistic equity, and expand access to educational materials for speakers of indigenous and minority languages. However, it also warns against an overreliance on AI tools without human oversight, particularly in contexts that demand cultural nuance and semantic precision. The presentation concludes with strategic recommendations for educators, software developers, and policymakers to enhance the ethical, equitable, and pedagogically sound application of AI translation in education and public service. Emphasis is placed on co-creating translation tools with native speakers and integrating AI within culturally responsive pedagogical frameworks for teaching the Yorùbá language.

Keywords: artificial intelligence; application; language translation; multilingual education; machine translation; Yoruba language.

Introduction

Language translation tools have evolved from rule-based systems and statistical models to neural architectures and large language models. These technical advances have yielded substantial improvements in fluency, contextual coherence, and cross-lingual transfer. At the same time, educational settings have grown more multilingual; teachers and learners benefit from technologies that mediate understanding across languages. This paper seeks to synthesise current knowledge about AI translation technologies and apply that knowledge to multilingual education and communication. The aims are threefold: to outline how AI supports translation tasks, to examine pedagogical applications and implications, and to propose practical recommendations for ethical and effective classroom adoption.

It is pertinent to clarify the terms used in this topic to enhance conceptual understanding and provide contextual clarity. There are two major terms central to this paper: *artificial intelligence (AI)* and *language translation.* A conceptual breakdown of these terms is therefore necessary.

Artificial Intelligence consists of two words: artificial and intelligence. The term "artificial" is defined by Merriam-Webster as "made, produced, or done by humans especially to seem like something natural," implying that intelligence in this context is human-made rather than organic. "Intelligence" in *artificial intelligence* refers to the emulation of human cognitive functions and the performance of goal-driven tasks through algorithmic processes. Hence, artificial intelligence can be defined as **a field of computer science concerned with the creation of computational systems capable of replicating human cognitive functions—such as reasoning, learning, perception, and decision-making—autonomously.**

Similarly, language translation can be examined by breaking down the components: language and translation. According to Chomsky (1965), "a language [is] a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements." Thus, language can be viewed as a system of grammatical rules that generates ~~an~~ infinite number of sentences from a finite set of linguistic elements.

Translation, on the other hand as been defined as "the replacement of textual material in one language (SL) by equivalent textual material in another language (TL)." and as "rendering the meaning of a text into another language in the way the author intended (Newmark (1988).

Drawing on these perspectives, language translation can be understood as a meaning-centered process of reproducing a text from one language to another, guided by principles of equivalence, faithfulness, and cultural appropriateness. While Nida and Taber (1969) emphasise natural equivalence, Catford (1965) focuses on linguistic correspondence, Newmark (1988) prioritises authorial intent, and Hatim & Munday (2004) highlight the cultural and situational dimensions of translation.

Objective of the Paper:

To examine how Artificial Intelligence-driven language translation technologies can enhance multilingual education and facilitate effective cross-linguistic communication, with a focus on their pedagogical applications, benefits, and limitations

Method:

Table 1.0

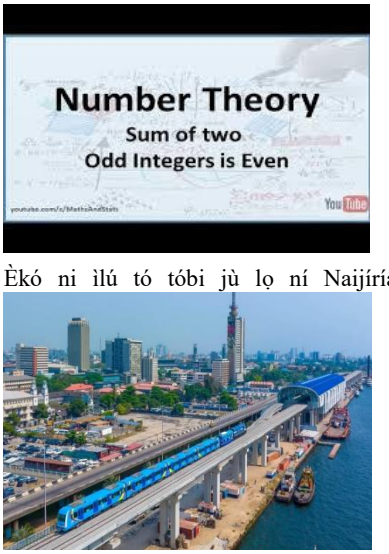
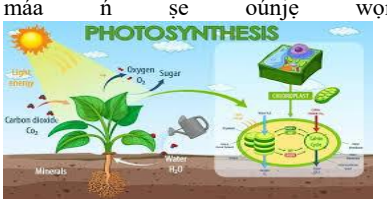
Method	**Description**	**Purpose**
Experimental Task	Participants will use an AI translation tool (e.g., Google Translate, DeepL, or a Yoruba-specific AI system) to translate educational content, which will then be evaluated for accuracy.	Measure actual performance of AI tools.

Examples:

Table 2.0

AI-Powered Yoruba Translation of Educational Content (10 Examples)

AI Tool & Subject Area	**English Sentence**	**AI Translation (Yorùbá)**	**Human-Verified Correction**	**Importance of the Tool**
Google Translate – Science	Water boils at 100 degrees Celsius.	Omi máa ń jó ní ìgbà otutú 100 Celsius. shutterstock.com · 1788868460	Omi máa ń hó ní Ọgọrùn Sẹlísíọsì.	Useful for science classes; provides accurate numeric and factual translation.
DeepL – Mathematics	The sum of two odd numbers is even.	Àkópọ̀ àwọn nọ́mbà méjì tó jẹ́ onírúurú ni àfín.	Àkópọ̀ àwọn nọ́mbà méjì tó jẹ́ àìgún dọgba.	Supports clear mathematical explanations; needs term consistency ("odd" vs "àìgún").

AI Tool & Subject Area	English Sentence	AI Translation (Yorùbá)	Human-Verified Correction	Importance of the Tool
Google Translate – Geography	Lagos is the largest city in Nigeria.	Èkó ni ìlú tó tóbi jù lọ ní Naijíríà. 	Èkó ni ìlú tó tóbi jù lọ ní Nàìjíríà.	Quick, accurate for place-based facts; minor spelling normalization needed.
DeepL – History	The Yoruba people have a rich cultural heritage.	Àwọn ènìyàn Yorùbá ní ìtàn àṣà tó lọ́rọ̀.	Àwọn ènìyàn Yorùbá ní ìtàn àṣà ajogunba tó dára.	Maintains cultural tone; helpful for humanities subjects.
Google Translate – Biology	Photosynthesis is the process by which plants make their food.	Photosynthesis ni ilana tí àwọn ògbìn fi máa ń ṣe oúnjẹ wọn. 	Ìlànà Ìtànṣán oorùn ni Ìlànà tí àwọn ohun ògbìn fi máa ń jẹ oúnjẹ wọn.	Good for basic explanations; scientific term could be adapted into Yoruba concept.
DeepL – Civic Education	Every citizen has the right to vote.	Gbogbo aráàlú ní ẹ̀tọ́ láti dìbò.	Gbogbo aráàlú ló ní ẹ̀tọ́ láti dìbò. *(Correct)*	Accurate in legal context; supports civic literacy.
Google Translate – Health Science	Exercise helps to keep the body healthy.	Ìdárayá ń ran ara lọ́wọ́ láti jẹ aláìsàn.	Ìdárayá ń ran ara lọ́wọ́ láti ní àláìsàn.	Shows need for correction where AI picks wrong word (“patient” instead of “healthy”).

AI Tool & Subject Area	English Sentence	AI Translation (Yorùbá)	Human-Verified Correction	Importance of the Tool
		Àkọ́kọ́ ọ̀rọ̀ nínú ìtàn náà jẹ́ akíkanjú.		
DeepL Literature	– The main character in the story was brave.		Olú ẹ̀dà inú ìtàn náà jẹ́ akíkanjú.	Useful for literary analysis; sometimes word choice for "main character" differs.
Google Translate Technology	– Computers can store and process data.	Kọ̀mpútà lè fi data pamọ́ àti ṣiṣẹ́da rẹ̀. Gbigbé igi ń ran lọwọ lati dinku idoti afẹ́fẹ́.	Kọ̀mpútà lè fi dátà pamọ́ kí o tún ṣẹ́da rẹ̀.	Helpful for ICT lessons; needs adaptation of loanwords.
DeepL Environmental Science	– Planting trees helps reduce air pollution.		Gbigbin igi ń ṣèrànwọ́ láti dín ìdòtí afẹ́fẹ́ kù.	Preserves meaning; orthographic accuracy needed for formal education use.

Types of AI-powered translation tools

1. *Neural Machine Translation (NMT) Tools:* NMT tools use deep learning models, particularly artificial neural networks, to translate text from one language to another. They learn from large bilingual corpora and consider full sentences rather than word-by-word translation. Examples: Google Translate, DeepL, Microsoft Translator.

Uses: Translating documents, websites, and emails in real time; Providing context-aware translations that preserve meaning and tone; Supporting multilingual education by offering more natural and fluent output; Assisting translators as a first draft before human editing.

2. *Statistical Machine Translation (SMT) Tools:* Earlier AI translation models that rely on statistical patterns from large bilingual text datasets. Less common today but still relevant in specialized. Examples: Older versions of Google Translate, Moses.

Uses: Translating structured, repetitive content such as technical manuals; Useful in low-resource environments where large neural models cannot be deployed; Backup in hybrid systems.

3. *Rule-Based Machine Translation (RBMT) Tools:* Systems that follow linguistic rules, grammar structures, and bilingual dictionaries rather than statistical prediction. Often combined with AI enhancements for accuracy. Examples: Apertium, Systran (earlier versions).
Uses: Translating highly specialized content where accuracy in grammar is critical; Suitable for languages with limited training data but rich linguistic rules; Preserving cultural nuances in traditional language translation projects.
4. *Hybrid Translation Tools:* Combine Neural Machine Translation (NMT), Statistical Machine Translation **(**SMT), and Rule-Based Machine Translation **(**RBMT) methods to improve accuracy and adaptability. AI models handle natural flow, while rule-based elements ensure correctness. *Examples:* Modern Systran, KantanMT.
Uses: Business communication requiring both fluency and terminology control; Technical or legal translations where accuracy is non-negotiable; Education platforms that require consistent translations for curriculum materials.
5. *Speech-to-Speech and Speech-to-Text Translation Tools:* AI systems that integrate speech recognition, machine translation, and speech synthesis for real-time oral communication across languages. *Examples:* Google Interpreter Mode, Microsoft Skype Translator, iTranslate Voice.
Uses: Multilingual meetings and conferences; Travel and tourism for instant spoken communication; Assisting language learners with pronunciation and comprehension.
6. *AI-Powered Translation APIs and Integration Tools:* Cloud-based services that allow developers to integrate translation capabilities into applications, websites, or chatbots. *Examples:* Google Cloud Translation API, Amazon Translate, IBM Watson Language Translator.
*Uses:*E-commerce sites offering multilingual product descriptions; Chatbots providing customer support in multiple languages; Social media platforms for automatic post translation.

The Use of AI Tools in Teaching and Translation for Multilingual Education: *Advantages and Disadvantages*

The integration of artificial intelligence (AI) into multilingual education has transformed the way educators and learners' access and interact with instructional content. AI-powered translation tools such as Google Translate, DeepL, and emerging Yoruba-specific systems are increasingly applied in both formal and informal educational settings. Their adoption, however, presents a range of benefits and challenges that merit critical evaluation, particularly in contexts where indigenous languages like Yoruba coexist with global languages such as English.

Advantages

Accessibility for Diverse Learners

AI translation tools expand access to educational materials by providing immediate translations for students who are more proficient in their mother tongue. For example, a science teacher can present the English sentence "Water boils at 100 degrees Celsius" alongside its Yoruba translation "Omi máa ń jó ní ìgbà otutú 100 Celsius", allowing students to engage with the content in a familiar language. This reduces language barriers and fosters inclusivity in linguistically diverse classrooms.

Faster Lesson Preparation

The ability to produce bilingual lesson content quickly is a significant advantage for teachers working with limited preparation time. A civic education worksheet in English can be translated into Yoruba within minutes, allowing educators to devote more time to pedagogical planning rather than manual translation.

Cost-Effective Resource Creation

In multilingual contexts, the cost of hiring professional translators for all subjects

can be prohibitive. AI tools offer a low-cost or free alternative, enabling schools to create bilingual lesson notes, assessments, and study materials without incurring substantial expenses.

Terminology Consistency

In technical subjects, consistent use of terminology is critical for comprehension. AI systems can be configured or trained to consistently render subject-specific terms. For example, "photosynthesis" can be uniformly translated as ìṣẹ̀lẹ̀ àwọ̀nà-ina, helping students recognise and recall the term across different science lessons.

Preservation of Indigenous Languages

The use of AI to generate Yoruba translations of academic materials supports the continued relevance of the language in formal education. This is particularly important for maintaining linguistic heritage in an era of increasing linguistic homogenisation.

Interactive Learning Opportunities

When students compare AI-generated translations with human-edited versions, they gain insight into language structure, idiomatic expressions, and cultural nuance. This process promotes bilingual literacy and develops critical thinking about translation accuracy.

Disadvantages

Accuracy Limitations

AI translation tools are not infallible. In the Yoruba–English context, mistranslations are common, particularly for idiomatic expressions or context-dependent terms. For instance, "healthy living" has been incorrectly rendered as aláìsàn ìgbésí ayé (patient life) rather than the more accurate ìlera rere. Such errors can mislead learners if not corrected.

Loss of Cultural Nuance

Languages are deeply tied to culture, and AI tools often produce literal translations that fail to capture cultural meanings. A proverb like "Half a loaf is better than none" might be translated word-for-word into Yoruba, losing the equivalent proverb Ìdajì burẹ́dì dára ju kò sí lọ, which better conveys the intended meaning.

Over-Reliance on Technology

Continuous dependence on AI-generated translations can discourage students from developing independent skills in reading, writing, and interpreting content in both languages. Over time, this may undermine language proficiency.

Inconsistent Quality Across Subjects

While AI tools may be reliable for general vocabulary, they often perform poorly with subject-specific content in fields like law, medicine, or literature. Without subject-matter review, such translations can lead to misunderstandings in technical or academic contexts.

Data Privacy Concerns

Most AI translation platforms operate on cloud-based servers, which means that uploading educational content—such as student essays or school records—may expose sensitive data to third-party providers, raising ethical and legal concerns.

Limited Contextual Understanding

AI tools still struggle with polysemous words and context-specific meanings. For example, the word "court" might be translated as ilé-ejọ́ (law court) when the intended meaning is "sports court" (pápá ìdárayá). This can confuse students, particularly in cross-disciplinary subjects.

Table 3.0

Advantages	Disadvantages
Accessibility for learners through immediate Yoruba translations of English materials.	Mistranslations and incorrect terminology without human review.
Rapid creation of bilingual teaching resources.	Loss of cultural meaning in proverbs and idiomatic expressions.
Reduction in translation costs for schools.	Over-reliance on AI can weaken bilingual skills.
Consistency in technical and academic terminology.	Variable quality across different subject areas.
Supports indigenous language preservation in education.	Potential privacy risks from uploading data to cloud-based AI tools.
Encourages active comparison between AI and human translations, fostering learning.	Misinterpretation of polysemous or context-specific terms.

Practical guidelines for classroom integration

1. *Treat AI as an assistive, not a replacement, tool*

Design tasks where machine translation supports learning objectives rather than doing the learning for the student. For example, use machine translation as a drafting step that learners must review and justify.

2. *Develop critical evaluation skills*

Teach students to evaluate machine outputs, identify likely error types, and cross-check with bilingual dictionaries or teacher guidance. Incorporate metacognitive prompts that require reflection on translation choices.

3. *Localise and validate content*

When possible, fine-tune or select models that handle local linguistic varieties. Engage local language experts to validate translations used in instruction.

4. *Ensure data privacy and consent*

Work with school administrators to select tools that comply with data protection standards. Use offline or on-device models where privacy concerns are acute.

5. *Provide teacher training and support*

Teachers need training in the capabilities and limits of AI translation, how to design appropriate activities, and how to interpret model outputs. Ongoing professional development and peer support help sustain effective integration.

6. *Address infrastructure and equity*

Prioritise access plans for devices and connectivity. Consider offline or lightweight solutions for low-bandwidth contexts, such as on-device translation apps or downloadable glossaries.

Case vignette: *Implementing AI translation in a primary classroom*

Consider a primary school in a multilingual district where the language of instruction often differs from many pupils' home languages. The teacher introduces a unit on environment science (focused on the local ecosystem). The teacher prepares parallel instructional resources: core text in the language of instruction and a machine translation into learners' mother tongues. Learners work in pairs to compare the original and translated versions and identify new, ambiguous, or context-dependent vocabulary. The teacher facilitates a discussion on cultural concepts and idiomatic expressions, highlighting why literal translations sometimes fail. Learners then revise a short summary using appropriate target language structures, supported by guided teacher feedback and peer review. The machine translation functions as scaffolding to ensure comprehension while the task simultaneously preserves active engagement and authentic language production.

This vignette illustrates how AI translation can increase access while preserving pedagogical aims. Critical elements

include teacher mediation, learner reflection, and validation of translations.

Research directions and future prospects

Improving low-resource language performance

Research must prioritise data collection, community-led corpus development, and transfer learning techniques that benefit languages with small corpora. Partnerships between researchers and local communities can yield ethically sourced, representative data.

Multimodal and contextual translation

Future models that combine text, audio, and visual context may better capture meaning in classroom discourse and multimodal resources. These models could support richer translation for literacy, oral language, and multimedia content.

Evaluation metrics aligned with education

Standard MT metrics capture surface similarity but do not measure pedagogical adequacy. Research should develop evaluation frameworks that assess how well translations support learning outcomes and cultural relevance.

Teacher-centred design and co-creation

Design research should involve teachers from initial stages to ensure tools meet classroom needs, are usable in typical school conditions, and align with curricula.

Recommendations

Based on the findings of this study on the application of Artificial Intelligence (AI) in language translation, I will propose these recommendations to enhance the effectiveness, accuracy, and cultural relevance of AI-assisted translation, particularly in educational contexts.

(1). Integrate Human Oversight with AI Translation Outputs

While AI tools such as Google Translate, DeepL, and domain-specific systems have demonstrated significant potential for speed and accessibility, their outputs should be reviewed by trained linguists or subject experts before adoption in formal learning environments. This will help address inaccuracies, maintain cultural nuances, and improve the quality of translated materials.

(2). Develop AI Models for Low-Resource and Indigenous Languages

Stakeholders in education and technology development should invest in building AI translation models trained on large, high-quality datasets for low-resource languages such as Yoruba, Igbo, and Hausa. This will ensure that these languages are accurately represented and remain active in academic, digital, and professional domains.

(3). Incorporate AI Translation Tools into Teacher Training

Teacher education programmes should include modules on the use of AI-powered translation in lesson preparation, bilingual material creation, and multilingual classroom interaction. This will enable educators to use AI tools efficiently and critically, while maintaining pedagogical quality.

(4). Adopt Context-Aware AI Systems

Educational institutions should prioritise the use of AI translation systems that can adapt to context, subject matter, and domain-specific terminology. Context-sensitive translation is particularly important for technical subjects such as science, law, and medicine, where literal translations may distort meaning.

(5). Encourage Bilingual Learning Practices

AI translation tools should be applied as part of an interactive bilingual learning approach. Students should be encouraged to compare AI-generated translations with human-translated versions, thereby improving their language skills, comprehension, and critical evaluation abilities.

(6). Establish Ethical Guidelines for AI Translation in Education

To protect student and institutional data, clear policies should be put in place on the responsible use of cloud-based translation tools. Confidential educational documents should be handled with secure, offline translation software whenever possible.

(7). Support Continuous Improvement through Feedback Loops

Developers of AI translation systems should create feedback mechanisms that allow educators and translators to report errors and suggest corrections. This will improve the quality and adaptability of AI translation tools over time.

Conclusion

The integration of Artificial Intelligence (AI) in language translation marks a pivotal transformation in multilingual education and international communication. Through advancements in neural machine translation, large language models, and hybrid human–machine workflows, AI demonstrates the capacity to overcome linguistic barriers that have historically impeded cross-cultural understanding and equitable access to knowledge. By enabling real-time, accurate, and context-sensitive translations, AI technologies now not only expand educational opportunities for learners in diverse linguistic settings but also promote the preservation and revitalization of minority and indigenous languages.

In the context of multilingual education, AI-supported translation tools allow educators and learners to interact with educational materials in their preferred languages, thereby enhancing comprehension, learner engagement, and inclusivity. This is particularly relevant in regions where language diversity is high, and resources in local languages are limited. Furthermore, the use of AI in translation contributes to intercultural competence by promoting exposure to multiple languages and enabling communication across social, geographical, and political boundaries.

However, the effective application of AI in translation demands careful consideration of ethical, cultural, and pedagogical factors. Machine translation systems, while increasingly accurate, remain prone to errors in idiomatic expressions, cultural nuances, and domain-specific terminologies. As such, the collaboration between AI systems and human expertise remains essential to ensure translations are contextually appropriate and culturally respectful. Moreover, issues related to data privacy, intellectual property, and potential bias in AI models must be addressed to guarantee fairness and trustworthiness in educational and communication settings.

Ultimately, AI-driven translation is not merely a technological tool but a strategic resource for fostering linguistic equity and the realisation of the Sustainable Development Goal on inclusive and quality education. As research and innovation in AI translation continue to evolve, stakeholders in education, policy, and technology must collaborate to design systems that are accurate, ethical, and adaptable to diverse linguistic contexts. The future of multilingual education and communication will increasingly depend on our ability to harness AI responsibly, ensuring that technology serves as a bridge rather than a barrier in our interconnected world.

The integration of AI in language translation represents a transformative opportunity for multilingual education. When applied strategically—balancing the efficiency of machine translation with the accuracy and cultural depth of human expertise—AI can significantly improve access to knowledge, promote linguistic diversity, and support inclusive learning in an increasingly interconnected world.

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AI-Enhanced Reading Strategy and English Reading Comprehension Achievement Among Public Senior Secondary Students in Ibadan, Nigeria

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Abstract

This study investigated the effect of an AI-enhanced internet-enabled reading strategy on senior secondary school students' English reading comprehension in Ibadan, Nigeria, with mobile technology self-efficacy as a moderating variable. The quasi-experimental pretest–posttest control group design was adopted, involving 102 SS II students from six public schools. The experimental group used internet-enabled devices to access reading passages, exercises, and collaborative activities on Google Classroom, while the control group received teacher-centered lessons with printed texts. The intervention lasted eight weeks. Data were collected using the English Reading Comprehension Achievement Test (r=0.76) and the Mobile Technology Self-Efficacy Questionnaire (r=0.82). Data were analysed with Analysis of Covariance (r=0.5). The results revealed that the AI-enhanced strategy significantly improved students' reading comprehension post-test scores, $F_{(1, 115)} = 25.20$, $p < .001$, partial $\eta^2 = .305$. The main effect of mobile phone self-efficacy and its interaction effects with the instructional strategy were not significant, indicating that the intervention was effective regardless of students' technology self-efficacy. The findings demonstrate the potential of AI-supported, internet-enabled approaches to improve reading comprehension and foster inclusive learning. It is recommended that AI-enhanced reading strategies and platforms, such as Google Classroom be integrated into secondary curricula to promote literacy and equitable educational outcomes.

Keywords: AI-enhanced reading, Internet-enabled learning, English reading comprehension, Mobile technology self-efficacy, Google classroom.

Introduction

Reading comprehension is central to academic achievement and cognitive development, especially in countries where English serves as the language of instruction, such as Nigeria. It enables learners to process, interpret, and evaluate information across subject areas, thereby laying the foundation for success in both school and lifelong learning. Yet, despite its critical role, English reading comprehension remains a major challenge for Nigerian secondary school students. National examination reports, particularly from the West African Examinations Council (WAEC), have repeatedly highlighted students' poor performance in reading comprehension tasks, attributing it to weak analytical skills, inadequate vocabulary development, and inability to make inferences from texts (WAEC Chief Examiners' Reports, 2023).

These persistent shortcomings have raised concerns about the adequacy of current instructional approaches in fostering effective comprehension. Prior research also indicates that traditional instructional strategies, including conventional and teacher-centred methods, are insufficient for developing the complex cognitive skills required for meaningful comprehension. The difficulties are further compounded by systemic challenges in the Nigerian educational system, such as overcrowded classrooms, insufficient instructional materials, and a teacher-centred pedagogy that prioritises rote memorisation over critical reading skills, all of which continue to undermine meaningful learning (Olatubosun, 2025). As a result, students often fail to develop the higher-order comprehension skills required for academic success. This situation has necessitated the search for innovative, technology-enhanced strategies

capable of complementing traditional instruction and addressing students' learning needs more effectively.

In this context, technology-driven instruction has gained prominence in global education reforms, offering flexible, interactive, and learner-centred alternatives to conventional teaching. Among the most promising innovations are AI-enhanced reading strategies, which leverage artificial intelligence to provide adaptive feedback, personalised scaffolding, and real-time assessment of learners' comprehension progress. By analysing reading behaviours, AI tools can identify gaps, recommend tailored texts, and suggest comprehension exercises, thereby increasing student engagement and fostering independent learning. AI support also reduces the cognitive burden on teachers, allowing them to provide targeted interventions for struggling learners.

Closely linked to AI-enhanced approaches are internet-enabled reading strategies, which enrich the learning experience by granting access to authentic and diverse texts, digital libraries, multimedia content, and collaborative tools. Such strategies encourage students to explore reading materials beyond the textbook, engage in peer-to-peer interaction, and use multimedia resources that make learning more stimulating (Bala & Verma, 2018). As Urdan and Weggen (2000) observed, internet-based platforms enable asynchronous and synchronous communication, flexibility, and personalised pacing, thereby promoting learner autonomy. In Nigeria, platforms like Google Classroom have become increasingly popular due to their accessibility, integration with other educational applications, and ability to foster teacher-student collaboration (Beal, 2017; Ari, Wijayatiningsih & Mulyadi, 2021). Recent evidence shows that Google Classroom enhances reading outcomes; for instance, students taught through this platform achieved significantly higher post-test scores than those taught with traditional methods (Wahyuni & Nurhandini, 2023). Integrating AI into such platforms makes reading practice more dynamic, interactive, and data-driven, offering an important opportunity to transform comprehension outcomes in resource-constrained contexts (Olatubosun, 2025).

However, the mere availability of technology does not automatically guarantee improved learning. The effectiveness of AI and internet-enabled strategies depends significantly on learners' readiness and confidence in using digital tools. This brings into focus the construct of mobile technology self-efficacy, which refers to students' belief in their ability to successfully use mobile devices and applications for academic purposes. Previous research in Ibadan revealed that while secondary school students demonstrated relatively high mobile technology self-efficacy, they also experienced high levels of reading anxiety, which constrained comprehension performance (Olatubosun, 2025). This suggests that confidence in navigating digital tools does not automatically translate to better learning outcomes unless emotional barriers such as anxiety are addressed.

The Unified Theory of Acceptance and Use of Technology (UTAUT) further provides a theoretical foundation for understanding how students adopt and effectively engage with technology. According to Venkatesh et al. (2003), technology adoption is influenced by performance expectancy, effort expectancy, social influence, and facilitating conditions. When applied to AI-enhanced internet-enabled reading, the UTAUT model explains how students' perception of usefulness, ease of use, peer influence, and availability of supportive conditions (such as internet access and teacher guidance) shape their willingness to adopt these tools. Thus, both mobile technology self-efficacy and the UTAUT framework highlight the central role of learner attitudes and contextual supports in maximising the benefits of technology-mediated reading interventions.

While several studies have demonstrated the effectiveness of technology integration in other subject areas, such as mathematics (Ran, Kim & Secada, 2022; Bright, Welcome & Arthur, 2024) and science (Aina, 2014; Onwunara, 2020), research on the use of AI-enhanced internet-enabled strategies for English reading comprehension in Nigerian secondary schools remains sparse. Even fewer studies have examined the moderating influence of psychological variables, such as mobile technology self-efficacy, on students' comprehension achievement. This gap calls for empirical investigation to determine not only the effectiveness of AI-driven interventions but also the conditions under which they produce optimal results.

Therefore, this study examined the impact of an AI-enhanced internet-enabled reading strategy on students' English reading comprehension achievement among public senior secondary school students in Ibadan, Nigeria. It further explored the moderating role of mobile technology self-efficacy, providing insights into how learner readiness and technology acceptance shape the success of technology-mediated reading instruction.

Statement of the Problem

English reading comprehension remains a major challenge for Nigerian secondary school students, as many struggle to understand texts, draw inferences, and respond coherently to comprehension questions. These difficulties are compounded by large class sizes, insufficient instructional resources, and traditional pedagogical approaches that emphasise memorisation over critical thinking. Consequently, conventional teaching methods are often inadequate to meet learners' needs. Technology-mediated strategies, including AI-enhanced and internet-enabled reading, offer opportunities to address these challenges by providing access to diverse texts, interactive features, and personalised learning experiences. However, students' confidence in using mobile devices affects their ability to benefit from these strategies. High mobile technology self-efficacy enables learners to navigate digital platforms effectively and engage with reading tasks, while low self-efficacy may limit their success. Despite these possibilities, limited empirical evidence exists in the Nigerian context regarding the effectiveness of AI-supported internet-enabled reading strategies and the moderating role of mobile technology self-efficacy in improving comprehension outcomes.

Objectives of the Study

The study set out to:

1. determine the main effect of an AI-enhanced internet-enabled reading strategy on students' English reading comprehension achievement in Ibadan, Nigeria.
2. examine the main effect of mobile technology self-efficacy on students' English reading comprehension achievement.
3. investigate the moderating effect of mobile technology self-efficacy and AI-enhanced internet-enabled reading strategy on English reading comprehension achievement.

Hypotheses

Ho_1: The AI-enhanced internet-enabled reading strategy has no significant main effect on students' achievement in English reading comprehension.

Ho_2: There is no significant main effect of mobile phone self-efficacy on students' achievement in English reading comprehension.

Scope of the Study

The study investigated the effect of an AI-enhanced internet-enabled reading strategy on English reading comprehension among SS2 students in public secondary schools in Ibadan, Nigeria. It focused on comprehension passages aligned with the school curriculum. The independent variable was the AI-supported

reading strategy, the dependent variable was reading comprehension achievement, and mobile technology self-efficacy served as the moderating variable.

Significance of the Study

The study provides practical benefits for students by showing how AI-enhanced reading platforms can help them improve their reading comprehension and strengthen their confidence in using digital tools. Teachers can use the findings to design more engaging, technology-driven lessons that meet students' learning needs. School administrators and policymakers can use the evidence to support infrastructure and programs that help students access digital learning tools effectively. In addition, the study highlights the importance of considering students' mobile technology self-efficacy when implementing AI-supported strategies, ensuring that interventions are tailored to learners' readiness. Overall, the study informs ways to improve English reading comprehension by centering students' experiences and capabilities in technology-enhanced learning environments.

Literature Review

Reading comprehension remains a fundamental aspect of academic achievement because it enables learners to derive meaning, interpret information, and apply knowledge across subjects. In Nigeria, where English serves as the language of instruction and the medium for national examinations, competence in reading comprehension is essential for educational success. Despite this, persistent challenges such as overcrowded classrooms, inadequate instructional resources, and teacher-centered pedagogy have continued to impede progress (Ogunleye, 2021; Olatunji, 2022). The West African Examinations Council (WAEC) Chief Examiners' Report (2023) further underscores this concern, highlighting that many secondary school students struggle with higher-order comprehension skills such as inference, evaluation, and interpretation. These recurring problems call for the adoption of innovative instructional approaches that can enhance engagement and deepen comprehension.

The integration of technology into reading instruction has been widely recognised as a promising solution to such challenges. Internet-enabled reading strategies provide students with access to a variety of texts and multimedia resources while creating opportunities for interactivity and learner autonomy. Studies have shown that such strategies foster critical thinking, motivation, and better comprehension outcomes compared to traditional teacher-centered methods (Chen & Zhang, 2020; Hazaea & Alzubi, 2018). More recently, Artificial Intelligence (AI) has expanded these opportunities by offering adaptive learning platforms that personalise reading tasks, provide instant feedback, and support differentiated instruction (Holmes, Bialik & Fadel, 2019). For instance, Liu, Wang and Chen (2023) found that AI-based reading applications significantly improved vocabulary acquisition and comprehension among secondary school students in China. Similar evidence from African contexts suggests that AI integration can compensate for gaps in instructional resources, promote learner autonomy, and encourage deeper interaction with texts (Adebayo, 2022; Alam, 2022).

The success of AI-enhanced reading strategies, however, depends not only on the technology itself but also on learner-related factors, among which self-efficacy has been found to be particularly important. Mobile technology self-efficacy refers to individuals' confidence in using mobile devices and applications for learning purposes. Higher levels of self-efficacy are linked to increased engagement and proficiency in digital reading, which in turn leads to improved comprehension and academic performance. This confidence enables students to access diverse learning resources, personalise their reading experiences, and collaborate effectively with peers. Rule and Walker (2019)

demonstrated a positive correlation between mobile technology self-efficacy and students' reading achievement, emphasising its importance in contemporary education. Similarly, Atwood-Blaine, Rule, and Walker (2019) found that young people with higher creative self-efficacy reported greater enjoyment in playing educational mobile games, and that these experiences further strengthened their self-efficacy, showing a positive feedback effect. Extending this discussion, Shahzad et al. (2023) highlighted the broader role of IT self-efficacy in supporting sustainable lifelong learning, innovation, and organisational performance, reinforcing the idea that digital confidence is a critical enabler of effective knowledge engagement.

Other studies have confirmed the pedagogical potential of mobile technology self-efficacy. Hazaea and Alzubi (2018) demonstrated that mobile-assisted language learning strengthened learner autonomy in reading by encouraging active engagement and reducing overreliance on teacher-centered instruction. Nwaizugbu and Augustine (2020) also showed that using mobile technology for learning purposes significantly increased undergraduates' self-efficacy and positively affected their academic performance. Research involving library and information science students found that technological readiness and computer self-efficacy strongly predicted e-learning adoption (Okuonghae, Igbinovia & Adebayo, 2021). Similarly, within distance-learning environments, students with higher technology self-efficacy were more successful in engaging with mobile instructional applications and achieving positive outcomes (Ibitoye & Awomoyi, 2023).

In addition, Olatubosun (2025) assessed students' mobile technology self-efficacy and reading anxiety in relation to English reading comprehension among public senior secondary school students in Ibadan. The findings revealed that while students displayed relatively high levels of mobile technology self-efficacy, reading anxiety remained a major obstacle, exerting a negative influence on comprehension achievement. This highlights the dual role of psychological and technological factors in shaping reading outcomes. The present study extends this line of inquiry by not only considering mobile technology self-efficacy but also integrating AI-enhanced internet-enabled reading strategies to evaluate their combined effect on students' comprehension performance.

Taken together, these findings suggest that while AI-enhanced and internet-enabled reading strategies show promise for improving comprehension, their effectiveness often depends on learners' confidence in using mobile technologies. In Nigeria, access to digital tools varies widely, and students' beliefs in their ability to use these tools—known as mobile technology self-efficacy—can influence how effectively they engage with such interventions. However, there remains limited empirical evidence from Sub-Saharan Africa, especially among secondary school students, on how mobile technology self-efficacy interacts with AI-supported reading strategies to shape comprehension outcomes. This study addresses that gap by examining the impact of an AI-supported, internet-enabled reading strategy on English reading comprehension achievement among public senior secondary students in Ibadan, while considering how mobile technology self-efficacy may moderate these effects.

Methodology

This study adopted the quasi-experimental pretest-posttest control group design to examine the effect of an AI-enhanced Internet-enabled reading strategy on senior secondary school students' English reading comprehension achievement, with Mobile Technology Self-Efficacy (MTSE) as a moderating variable. The independent variable was the mode of instruction-AI-enhanced Internet-enabled strategy versus conventional reading strategy-while the dependent variable

was reading comprehension achievement. MTSE was measured at two levels: high and low.

Six public senior secondary schools in Ibadan were purposively selected based on prior WASSCE participation, availability of internet-enabled devices, and willingness of administrators, teachers, parents, and students to participate. Students with internet-enabled devices were assigned to the AI-enhanced reading group, which engaged with reading passages, exercises, and collaborative activities on Google Classroom. The control group received teacher-centered lessons using printed texts. The intervention lasted eight weeks, with three 40-minute sessions per week, and teachers delivering the AI-supported programme were trained and assessed for mastery of the instructional guide.

The AI-enhanced instructional guide included eight weekly comprehension passages. Students first received conventional instruction, then engaged independently on Google Classroom using personal devices. The guide structured learning by setting objectives, designing strategies and assessments, delivering materials, and evaluating progress, integrating traditional teaching with technology to promote autonomous learning, collaboration, and improved reading comprehension.

Data were collected using the English Reading Comprehension Achievement Test (r=0.76) and Mobile Technology Self-Efficacy Questionnaire (r=0.82). Data were analysed using ANCOVA at 0.05 level of significance.

Results

Hypothesis 1: Effect of AI-Enhanced Internet-Enabled Reading Strategy

Table 1: ANCOVA of Post-Attainment by AI-enhanced Internet-enabled Reading Strategy and Mobile Technology Self-Efficacy

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	953.493	5	190.699	11.74	.001*	.338
Intercept	950.262	1	950.262	58.50	.001*	.337
Pre-Attainment Test	135.636	1	135.636	8.35	.005*	.068
AI-Enhanced Reading Strategy	818.778	1	818.778	25.20	.001*	.305
Mobile Technology Self-Efficacy	3.079	1	3.079	0.19	.664	.002
Treatment × Mobile Tech Self-Efficacy	5.221	1	5.221	0.16	.852	.003
Error	1868.055	115	16.244			
Total	12490.750	128				
Corrected Total	3770.498	127				

*p < .05

Table 1 presents the ANCOVA results for post-attainment by AI-enhanced reading strategy and MTSE. The AI-enhanced Internet-enabled reading strategy had a significant effect on students' reading comprehension achievement, $F(1,115) = 25.20$, $p = .001$, Partial $\eta^2 = .305$, accounting for 30.5% of the variance in post-test scores after controlling for prior performance. In contrast, MTSE and the interaction between the strategy and MTSE were not significant, indicating that the strategy was effective regardless of students' confidence in using mobile devices. Thus, the null hypothesis (H_{01}) is rejected.

Hypothesis 2: Main Effect of Mobile Technology Self-Efficacy

Table 2: ANCOVA of Post-Attainment by Mobile Technology Self-Efficacy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Mobile Technology Self-Efficacy	3.079	1	3.079	0.19	. 664	. 002

The ANCOVA result shown in Table 2 indicates that MTSE did not significantly influence reading comprehension achievement, $F_{(1,115)} = 0.19$, $p = .664$, Partial $\eta^2 = .002$. This shows that students' confidence in using mobile devices, whether high or low, did not affect post-test performance, and the null hypothesis (H_{02}) was not rejected. The estimated marginal means was also carried out and the result is presented in Table 3.

Table 3: Estimated Marginal Means of Post-Test Reading Comprehension by Mobile Technology Self-Efficacy

MTSE Level	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Low MTSE	48.21	1.13	45.97	50.45
High MTSE	48.89	1.15	46.61	51.17

Table 3 presents the estimated marginal means, showing very similar post-test scores for students with low MTSE (M = 48.21, SE = 1.13) and high MTSE (M = 48.89, SE = 1.15), with overlapping confidence intervals. This further confirms that MTSE did not significantly influence reading comprehension outcomes.

Discussion of Findings

The study examined the impact of an AI-enhanced Internet-enabled reading strategy on senior secondary school students' English reading comprehension, considering Mobile Technology Self-Efficacy (MTSE) as a moderating variable. The findings revealed that the AI-enhanced reading strategy significantly improved students' post-test reading comprehension scores, accounting for 30.5% of the variance after controlling for pre-test scores. This demonstrates that the strategy was highly effective in enhancing reading achievement, highlighting its potential as a flexible and context-sensitive instructional innovation. This outcome reinforces the argument that integrating technology into reading pedagogy can address persistent challenges of overcrowded classrooms, inadequate resources, and teacher-centred approaches that have been identified as barriers to students' performance in English reading (Ogunleye, 2021; Olatubosun, 2025).

The significant improvement observed suggests that students' interaction with reading passages, exercises, and collaborative activities on Google Classroom contributed to deeper understanding and retention of textual content. By integrating traditional instruction with technology, the AI-enhanced strategy provided a structured yet interactive learning environment that allowed students to connect prior knowledge with new information. This is consistent with the view that student-centred and technology-driven strategies have the potential to enhance learning outcomes in English reading (WAEC Chief Examiner's Report, 2023; Olatubosun, 2025).

In contrast, Mobile Technology Self-Efficacy did not significantly influence students' reading comprehension. Both

students with high and low self-efficacy achieved similar post-test scores, indicating that the effectiveness of the AI-enhanced reading strategy was consistent across varying levels of confidence in using mobile devices. This finding underscores the inclusivity of the strategy, suggesting that prior familiarity with technology is not a prerequisite for successful learning. It also reflects the potential of well-designed AI-supported instructional interventions to reduce barriers associated with digital literacy and provide equitable learning opportunities.

Moreover, the non-significant interaction between the reading strategy and MTSE indicates that the AI-enhanced approach works effectively regardless of students' technological confidence. This is particularly relevant in resource-constrained settings where disparities in access to digital devices and technology skills exist. As Olatubosun (2025) emphasises, instructional technology must be adaptable to diverse learners' contexts. Overall, the findings establish the AI-enhanced Internet-enabled reading strategy as a robust instructional approach capable of improving English reading comprehension while supporting all learners, independent of their prior experience with technology.

Conclusion

This study investigated the impact of an AI-enhanced internet-enabled reading strategy on students' English reading comprehension achievement in public senior secondary schools in Ibadan, Nigeria, with mobile technology self-efficacy as a moderating variable. The findings demonstrated that students exposed to the AI-enhanced reading strategy performed significantly better than their counterparts taught with conventional methods. Furthermore, mobile technology self-efficacy was found to play a moderating role, as students with higher levels of confidence in using mobile tools engaged more effectively with the strategy and achieved stronger comprehension outcomes. These results confirm that both technological innovation and learner readiness are critical in strengthening comprehension instruction in senior secondary schools.

Recommendations

1. Integration of AI tools in classrooms: Secondary schools should adopt AI-supported internet-enabled platforms such as Google Classroom to improve students' access to diverse texts, personalised feedback, and interactive comprehension activities.
2. Capacity building for students: Stakeholders should provide digital literacy training that enhances students' mobile technology self-efficacy, ensuring that learners are adequately prepared to use AI-based tools for reading.
3. Teacher professional development: Teachers should be trained to incorporate AI-enhanced strategies into lesson delivery and assessment, thereby shifting instruction from rote memorisation to interactive and learner-centred approaches.
4. Policy support: Educational policymakers should prioritise the integration of AI-enhanced reading strategies within national curricula and provide the infrastructure needed to sustain technology-driven instruction in public schools.
5. Further research: More studies should be conducted across other subjects and regions in Nigeria to broaden the evidence base and establish generalisable findings on AI-enhanced learning.

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Artificial Intelligence in the Service of Language Translation

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Abstract

This paper adopts the qualitative method to highlight some of the innumerable benefits of translation such as preserving cultural heritage, supporting international diplomacy and enabling access to global experiences, e-commerce, literature and educational resources. It also discusses the ways through which the advent of artificial intelligence can make language translation a welcome development. The evolution of translation in the digital age particularly with the advent of artificial intelligence is examined to assess contemporary developments and ethical considerations. This study argues that while translation has undergone significant transformation in the era of artificial intelligence, the human element remains central to effective translation in cultural and creative contexts. Suggestions are made on ways of using AI to enhance effective language translation

Keywords: History of machine translation, communication equity and inclusion, language ethics and AI translation, evolution of MT translation, human input in AI translation, indigenous languages and AI translation nuances.

Introduction

Language translation has been a fundamental human challenge throughout history, serving as a bridge between cultures and facilitating global communication. The advent of artificial intelligence has transformed this ancient practice into a sophisticated technological domain offering unprecedented speed, accuracy and accessibility in cross linguistic communication. (Koehen 2020) posited that AI translation systems have evolved from simple rule based approaches to complex neural architecture capable of understanding context, maintaining coherence, and adapting and adapting to diverse linguistic patterns.

The significance of artificial intelligence translation extends beyond mere word substitution, encompassing semantic understanding, cultural adaptation and pragmatic interpretation. As globalization accelerates and digital communication expands, the demand for accurate, efficient and culturally sensitive translation services has intensified (Forcada & Way,2023). This paper provides an examination of AI's role in language translation. It will go further to examine the impact of human involvement in machine translation. It will analyze technological foundations, methodological innovations and practical applications while addressing current limitations and future prospects.

Literature Review:

The formal study of translation has progressed significantly over the centuries, in its development, several theoretical frameworks have been developed. These frameworks aim to explain how translation works guide professional practice and account for the relationship between source and target texts. Modern translation theory is multidisciplinary, drawing from linguistics, literary studies, cultural studies and communication theory. Translation theory has undergone several paradigm shifts from inception of translation studies as an empirical discipline (Holmes, 2000).

With the advancement of data driven machine translation (MT) systems, it has become possible to, with varying degrees of quality, to translate between two pairs of languages. The only precondition is the

availability of enough monolingual (Lample et.al., 2018); Artetxe et.al., 2018) or parallel data (Vaswani et.al., 2017); Bahdanau et. al., 2015). There are numerous advantages of having high performing MT system, for example they increase access to information for speakers of indigenous languages (Mager et. al., 2018) and also assist in the revitalisation of efforts of languages (Zhang et.al., 2022).

History

The journey of machine translation began in the 1950s with Warren Weaver's memorandum proposing computational approaches to translation (Hutchins, 2021). Early systems relied on direct word-to-word substitution of basic grammatical rules, achieving limited success due to the complexity of natural language. The introduction of statistical machine translation (SMT) in the 1990s marked a significant advancement, utilising large parallel corpora to learn translation (Brown et al., 1993).

The paradigm shift occurred with the introduction of neural machine translations in the 2010s. (Sutskever et.al., 2014) demonstrated that sequence-to-sequence models could achieve superior performance compared to traditional SMT systems. This breakthrough paved the way for more sophisticated architectures and methodologies that formed the foundation of contemporary AI translation systems.

AI translation models have moved from the one language input to multilingual models. Paving way for language understanding and usage across continents. But, artificial languages cannot exist without the community of people that use (or have traditionally used them to communicate (Mager et.al.,2023). Therefore, the development of AI for language translation should foster indigenous languages not further push them towards extinction.

In building translation robots, speakers of the languages are not often involved when a model strained (Parlick et. al., 2014). In their place, the data collection processes (Fort et. al., 2014) and human evaluation directly interact with the speakers and therefore, human evaluation and data collection processes seem to override the original speakers of the language; the language hold a lot of semantic implications.

Advent of AI

Linguistic translation is an academic inter discipline that deals with the systematic study of the theory, description and application of translation, interpreting and localisation. Translation encompasses not only linguistic transfer of meaning between languages and cultural mediation .involving the complex negotiations of differences in language contexts, social structures and communicative practices. Translation is therefore essential for cross cultural and cross–socio linguistic understanding of language culture, and meaning making processes.

The introduction of attention mechanisms by BAhdanau et.al., 2015) addressed the bottleneck problem in sequence-to-sequence models, enabling better handling of long sentences and improved translation qualities. Vaswani et.al., 2017) further revolutionised the field with the transformer architecture, which became the cornerstone of modern NMT systems. The Self attention mechanism allowed models to capture complex linguistic relationships and dependencies across different positions in the input of sequence.

Recent research has focused on scaling transformer models and improving their multilingual capacities. Google's development of multilingual neural machine translation systems (Johnson et.al.,2017) demonstrated the feasibility of single models handling multiple language pairs, while facebook's M2M -100 model (Fan et. al., 2021) achieved translation between 100 languages without relying on English as intermediate language.

The emergence of large language models has introduced new paradigms in AI translation. Brown et.al. (2020) showed that GPT-3 could perform translation tasks through few-shot learning without explicit training on translation data. This capability has been further enhanced in subsequent models, with ChatGPT and GPT-4 demonstrating remarkable translation abilities across diverse language pairs and domain (OpenAI2023).

The integration of instruction tuning and reinforcement learning from human feedback (RLHF) has improved alignment of AI translation systems with human references and expectations (Ouyang et.al., 2022). These developments have enabled more nuanced and contextually appropriate translations, addressing some of the traditional limitations of rule –based and statistical approaches.

Modern AI translation systems primarily rely on transformer –based architectures, which have proven superior to recurrent neural networks (RNNs) and convolutional neural networks (CNNs) in translation tasks.

The transformer's ability to process sequences in parallel and capture long range dependencies makes it particularly suitable for translation application (Rogers et.al., 2020).

The encoder-decoder architecture remains fundamental to most translation systems, with the encoder processing the source language input and the decoder generating the target language output. Recent innovations include modifications to attention mechanisms, potential encodings and layer normalisation techniques to improve training stability and translation quality (Tay et.al.,2022).

Contemporary AI translation systems employ diverse training methodologies to achieve optimal performance. Pre-training on large monolingual corpora followed by fine –tuning on parallel translation data has become a standard approach (Liu et.al.,2020). This methodology enables models to learn rich linguistic representations before specialising in translation tasks.

Back translation techniques, where monolingual data is translated to create synthetic synthetic parallel corpora, have proven effective for improving translation quality, particularly for low-source language pairs (Sennrich et.al.,2016). Additionally, multilingual training approaches allow models to leverage cross-lingual transfer learning, improving performance on languages with limited training data (Arivaz, hagan et.al.,2019)

The evaluation of AI translation systems has evolved from automatic metrics to more sophisticated approaches that consider semantic similarity and human judgement. While BLEU (Papineni et. al., 2020) remains widely used, newer metrics like BERT score (Zhang & Zong, 2016) and COMET (Rei et.al.,2020) provide correlation with human evaluation by incorporating semantic understanding.

Human evaluation remains the gold standard for assessing translation quality, with metrics including adequacy, fluency and cultural appropriateness. Recent research has explored the use of AI systems for automatic evaluation, potentially reducing the cost and time required for quality assessment while maintaining reliability (Freitag et.al., 2022).

Major technology companies have deployed AI translation systems that serve millions of users daily. Google Translate, utilising neural machine translation since 2016, supports over 100 languages and processes billions of translation requests (Will et. al.,, 2016). Microsoft Translator and Amazon Translate offer similar services with focus on enterprise application and API integration.

These commercial systems demonstrate the practical viability of AI translation, providing real-time translation for web content, mobile applications and communication platforms, thereby making cross- linguistic interaction more accessible and seamless (Castilho et.al.,2023).

Application of AI in Language Translation-nuances and Challenges

AI translation has found particular success in specialised domains where terminology consistency and accuracy are crucial. Medical translation systems leverage domain specific training data achieve high accuracy in translating clinical documents, research papers and patient information (Dew et.al., 2022). Legal translation applications focus on maintaining precision in contracts, regulations and court documents while preserving legal terminology and concepts.

Technical translation for software localisation, user manuals and engineering documentation has benefited from AI systems ability to handle specialised vocabulary and maintain consistency across large language document sets. These applications demonstrate AI translation potential to address specific industry needs while maintaining professional quality standards (Daems et.al.,2023).

Recent developments to AI translation include real time speech translation and multimodal system that combine text, speech and visual information. Speech –to-speech translation systems like Google's interpreter mode and Microsoft's presentation Translator enable live conversation translation, breaking down language barriers in real time communication (Jia et.al., 2022).

Multimodal translation systems that incorporate visual context from images or videos represents an emerging frontier, enabling more accurate translation of content that relies on visual cues or cultural context. These systems demonstrate the potential for AI translation to move beyond text-based application toward more comprehensive communication support (Chen et. al.,2023).

Challenges

Despite the numerous positive impacts that AI translation has had on cross-linguistic translation. Several challenges and limitations persist in some translation circumstances, cultural nuance, humor and context must be preserved, however, AI translation systems frequently struggle with these (Kenny,2018). An AI system might, for instance, translate an English joke into Chinese in a way, that is not amusing to Chinese speakers, or might render cultural allusions into another language in a way that is not relevant to the intended audience (Amini et.al.,2024). The language with symbols and logographic designs pose a natural problem to AI translation systems, synthetic variations is another problem that hinders accurate AI translation (Sayle,2009) as cited by Amini, (2024) pointed out the difficulties of translating chemical nomenclature are not covered , including the requirement to be conversant with the most recent terminology in both source language and target languages as well as the significance of the names in terms of cultures and history. In addition, handling idioms, metaphors, and cultural nuances, as well as low-resource languages, where the lack of training data can severely affect translation accuracy (Koehn, 2017). Hartman, (2023) contends that the significance of freedom and privacy for elderly individual and people with disabilities is frequently not sufficiently considered during technical development of AI- based Ambient Assisted Living (AAL) systems.

Another important challenge is the lack of adequate collaboration between human and AI translation system. The important role of the human in translation cannot be overemphasized. So, to achieve a culturally and contextually nuanced translation, the human linguist and her innumerable contribution to translation should be considered by developing translation systems using AI. Weisz et.,al., (2021) explored the prospects and difficulties of human - AI collaboration in code translation. The findings confirmed that though not yet flawless, AI code translation can nevertheless be helpful for human translators, especially when deployed cooperatively as AI system can translate code far more quickly than human translators and into greater languages but humans can account

for the accuracy in contextual use, cross – cultural exchanges, idiomatic expressions and nuance.

Many of the world's languages lack sufficient digital resources for training high quality AI translation system. Most of these languages lack orthographies and some of them have been minoritised by dominant languages such as English, French, Italian among others. So, low resource languages face challenges including limited parallel corpora, diverse dialects and insufficient computational resources for model development (Hedderich et. al., 2021). This digital divide risk further marginalizing speakers of minority languages in global communication. Recent efforts to address low resource language translation include transfer learning approaches, synthetic data generation and community driven data collection and so on.

Conclusion

Artificial intelligence has fundamentally transformed language translation, evolving rule based systems to sophisticated neural architectures capable of producing high quality translations across numerous language pairs.

The integration of transformer architectures, large language models and advanced training methodologies has resulted in translation systems that serve millions of users worldwide and enable unprecedented level of cross-linguistic communication.

However, significant challenges remain issues such as low-resource languages, contextual understanding, cultural nuance, bias mitigation and support for low resource or minority languages continue to require attention from researchers and developers. The future of AI translation lies in not replacing human expertise but creating more human-AI collaborative systems that leverage the strength of both artificial and human intelligence.

Future research should focus on multimodal approaches, improved support for low –resource language and development of more culturally aware systems. The ultimate goal is not perfect translation but rather creation of tools that facilitate meaningful communication across linguistic and cultural boundaries while respecting the richness and diversity of human language.

Recommendation and Best Practices

Based on the current state of challenges identified in AI translation research, several recommendations emerge:

(i) Interdisciplinary Collaboration
Closer collaboration between computer scientists, linguists and cultural experts is essential for development of more culturally aware and linguistically sophisticated translation systems.

(ii) Evaluation Standards
The development of more comprehensive evaluation frameworks that assess not only accuracy but also cultural appropriateness, bias and user satisfaction

(iii) Open Research
Promoting open source research and data sharing to accelerate progress and ensure equitable access to translation technology across different languages and communities.

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Analysis of Grammatical Errors in Senior Secondary Students' Essay Writing in Ilorin, Kwara State, Nigeria

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Abstract

This study investigates the types and frequency of grammatical errors in essay writing among senior secondary school students in Ilorin, Kwara State, Nigeria. Using a descriptive survey design and corpus-based analysis, data were collected from 90 SS2 students across three class streams—Science, Art, and Commercial—through an essay writing task. Errors were identified and classified into five grammatical domains: tense, subject-verb agreement, article, preposition, and pronoun. Findings revealed that tense errors (31.4%) were the most frequent, followed by article and subject-verb agreement errors, while pronoun errors were the least common. Gender-based analysis showed that male students committed more errors of tense, whereas article errors were more frequent among female students. Class-based comparisons indicated that tense errors were prevalent in Science and Art streams, while subject-verb agreement errors dominated in the Commercial stream. The study concludes that persistent grammatical errors, especially in verb tense usage, reflect a deeper gap in learners' mastery of English language structure. It recommends targeted grammar instruction, inclusive feedback strategies, and formative assessments integrated into the English curriculum to enhance students' writing proficiency. This research holds pedagogical significance for educators and policymakers seeking to improve grammar instruction in Nigerian secondary schools.

Key words: Corpus analysis, Educational assessment, Essay writing, Tense error, Article error,

Introduction

Writing, an essential skill in English language that every student should have, shapes how ideas and argument are communicated. For secondary school students, essay writing is used to measure their writing ability. However, writing an academically coherent essay demands familiarity with vocabulary and also precision in grammatical conventions. In Nigeria, junior secondary school students are expected to write essays with correct grammar, yet many still struggle with required skills, resulting in grammatical error at every instance of writing. These persistent grammatical errors manifest in sentence construction, subject-verb agreement and tense consistency, undermining clarity and flow of ideas. Such shortcomings pose a significant challenge to students' writing form of communication, leading to poor academic performance.

Evidence from national examinations underscores the extent of poor writing skills among the students across schools in Nigeria. Available data from the West African Senior School Certificate Examination in 2024 shows that 503,275 out of the 1.8 million candidates failed both English (Omisakin, 2024). Writing is one of the major components of English-language assessment at SSCE level. Essay writing gives students the opportunity to demonstrate their understanding of a topic and to use language in a clear and organised way. It is used to evaluate expressive and critical thinking skills as well as mastery of grammar (Reyes, 2025).

Grammatical errors in senior secondary students' essays often take the form of missing or misplaced words, wrong verb forms, and confused articles and prepositions. When a sentence lacks subject verb agreement or uses a wrong article, its meaning becomes

unclear and readers must work harder to follow the idea. Students may also use a verb tense that does not match the time of the action they describe, which creates confusion about when events happen. In addition, problems with punctuation such as missing commas or full stops can break the flow of an argument and make paragraphs hard to read. These issues are not merely surface mistakes but point to deeper gaps in students' understanding of how the English language works in an academic setting (Jatau et al., 2024). Beyond structure, students sometimes choose words that do not fit the context.

In its broadest sense, assessment refers to the systematic process of gathering, analysing, and interpreting information about learner performance (Huhta et al., 2023). Assessment can be formative which is done during teaching to guide the lesson, while summative tests measure what students have learned at the end. Gender is one of the factors capable of influencing the performance of students in essay writing. It is also worth mentioning that Ilorin hosts a mix of public and private senior secondary schools with very different levels of resources and support (Puranik, 2022). Therefore, assessment of senior secondary school students' grammatical error in essay writing in Ilorin, Nigeria is of both social and academic significance.

Purpose of the Study

The general purpose of this study was to analyse senior secondary school students' grammatical error in essay writing in Ilorin, Nigeria. Specifically, the study:

a) determined the frequency of grammatical error across domains of tense, subject-verb agreement, article, preposition, and pronoun among secondary school students' Ilorin, Nigeria.
b) analysed the influence of gender on the grammatical errors of secondary school students'.
c) determined and categorise senior secondary school students' grammatical error across domains based on class.

Research Questions

This study was guided by the following research questions:

a) How frequently do secondary school students commit grammatical errors across the domains of tense, subject-verb agreement, article, preposition, and pronoun in Ilorin, Nigeria?
b) Does gender significantly influence secondary school students' grammatical errors across different domains?
c) How frequently do secondary school students commit grammatical errors across different domains based on class?

Research Hypotheses

The study tested the following research hypotheses at a 0.05 level of significance:

H01: There is no significant influence of gender on the overall frequency of grammatical errors made by senior secondary school students in Ilorin, Nigeria.

Methodology

This research adopted a descriptive survey design with focus on corpus analysis, using a quantitative approach. The study was carried out in Ilorin metropolis, Kwara State, Nigeria, which comprises part of Ilorin East, Ilorin South, and the whole of Ilorin West local government areas. The target population consisted of SS2 students across secondary schools in these local government areas. The sample included 90 respondents selected across the selected local government area using multistage sampling technique. All the respondents participated willingly after approval had been sought from their school managements. All the gathered data were treated with confidentiality, as no students

were exposed to any form of harm. Data were gathered using the Essay Task and Grammatical Error Identification and Classification instrument (ETGEIC). The validity of the instrument was ascertained by experts, while the reliability of the instrument was ascertained by subjecting it to inter-rater analysis. The data obtained in this study were analysed using both descriptive and inferential statistical procedures. The errors were classified reflecting five grammatical components (Tense, subject-verb agreement, article, preposition & pronoun). Participants' demographic characteristics were summarised using the percentages. To answer the research questions, grammatical error data was profiled by reporting frequencies, percentages, and mean error counts for each of the five targeted domains. The null hypotheses were tested using an independent-samples t-test at 0.05 level of significance. The instrument for this study was titled Essay Task and Grammatical Error Identification and Classification (ETGEIC)**.** This instrument contained four sections: A, B, C and D. Section A, comprised demographic information of the respondents, and class stream (Science, Art, Commercial). Section B presents an essay task itself and each participant was given forty minutes to write a 450-word essay. The content and construct validity of the instrument was ascertained through experts' input. The reliability of the ETGEIC was assessed through an intra-rater correlation coefficient of 0.79.

Data Analysis and Results

Demographic Data

The demographic data for the study were analysed in table 1 and 2:

Table 1: Percentage Distribution of Participants by Gender

Gender	Frequency	Percentage (%)
Male	50	55.5
Female	40	44.5
Total	**90**	**100.0**

Table 1 shows the percentage distribution of the participants based on gender. The Table reveals that there were 50 male participants representing 55.5% and 40 female participants representing 44.4%. This means that the male participants were more in number than female participants that responded to the instrument.

Table 2: Percentage Distribution of Participants by Class

Class	Frequency	Percentage (%)
Science	30	30.33
Art	30	30.33
Commercial	30	30.33
Total	**90**	**100**

Table 2 shows the percentage distribution of the participants by class stream. It can be seen that 30 students (representing 30.33%) were in the Science class, 30 students (30.33%) were in the Art class, and 30 students (30.33%) were in the Commercial class.

Analyses of Data to Answer the Research Questions

Analyses of data to answer the research questions are presented in Tables 3, 4 and 5 below:

Research Question a: How frequently do

senior secondary school students commit grammatical errors across different domains: tense, subject-verb agreement, article, preposition, and pronoun in Ilorin, Nigeria?

Table 3: Total and Percentage Distribution of Grammatical Errors by Domain (N = 36)

Error Domain	Total Errors (Sum)	Percentage of All Errors (%)
Tense	22	31.4
Subject–Verb Agreement	14	20.0
Article	15	21.4
Preposition	10	14.3
Pronoun	9	12.9
Total	**70**	**100.0**

Data in Table 3 indicates that tense errors were the most frequent category, while pronoun errors were the least frequent among the students.

Research Question b: How frequently do senior secondary school students commit grammatical errors across different domains based on gender?

Table 4: Distribution of Grammatical Errors across Domain for Male and female Students

Error Domain	Male	Female
Tense	8 (33.3%)	12 (44.4%)
Subject–Verb Agreement	3 (12.5%)	5 (18.5%)
Article	6 (25.0%)	4 (14.8%)
Preposition	3 (12.5%)	2 (7.4%)
Pronoun	4 (16.7%)	4 (14.8%)
Total Errors	**24 (100.0%)**	**27 (100.0%)**

Table 4 highlights that tense errors are frequently made by male students' errors, whereas article errors are frequently made by female students' errors.

Research Question: How frequently do senior secondary school students commit grammatical errors across different domains based on class?

Table 5: Distribution of Grammatical Errors across Domain based on Class

Error Domain	Science	Art	Commercial
Tense	8 (33.3%)	12 (44.4%)	2 (9.5%)
Subject–Verb Agreement	3 (12.5%)	5 (18.5%)	8 (38.1%)
Article	6 (25.0%)	4 (14.8%)	5 (23.8%)
Preposition	3 (12.5%)	2 (7.4%)	5 (23.8%)
Pronoun	4 (16.7%)	4 (14.8%)	1 (4.8%)
Total Errors	**24 (100.0%)**	**27 (100.0%)**	**21 (100.0%)**

Data in Table 5 indicates that tense errors dominate in both Science and Art streams, while agreement errors are most frequent among Commercial students. Pronoun errors were least frequent in the Commercial class, whereas agreement and preposition errors were lowest in the Science and Art streams respectively.

Test of Hypotheses

The two null hypotheses of the study were tested using independent samples t-test and Analysis of Variance (ANOVA). The null hypotheses were tested at 0.05 level of significance. The summary of the test of hypotheses are presented in Table 6 to 8 as follows:

H01: There is no significant influence of gender on the overall frequency of grammatical errors made by senior secondary school students in Ilorin, Nigeria.

Table 6: t-test analysis of the significant influence of gender on the overall frequency of grammatical errors made by senior secondary school students in Ilorin, Nigeria

Group	N	Mean	SD	t-cal	Df	p-value	Decision
Male	50	2.11	1.45				
				0.72	34	0.48	Not Rejected
Female	40	1.76	1.40				

Data in Table 6 show the comparison of overall grammatical error frequency between male and female students. Male students (M = 2.11, SD = 1.45) had a slightly higher mean number of grammatical errors than female students (M = 1.76, SD = 1.39). However, the result of the independent-samples t-test showed that this difference is not statistically significant, $t_{(34)} = 0.717$, p = .478. Thus, the null hypothesis is not rejected. This implies that gender does not have a significant influence on the total grammatical errors committed by the students in this study.

$H_0$2: There is no significant influence of class on the overall frequency of grammatical errors made by senior secondary school students in Ilorin, Nigeria.

Table 7: ANOVA analysis of analysis of the significant influence of class on the overall frequency of grammatical errors made by senior secondary school students in Ilorin, Nigeria

Class Stream	N	Mean	SD	F	Df	Sig.	Decision
Science	30	2.00	1.14				
Art	30	2.25	1.29	0.669	35	0.52	Rejected
Commercial	30	1.58	1.56				
Total	**90**	**1.94**	**1.41**				

The second hypothesis was tested using a one-way analysis of variance (ANOVA) to determine whether there is a significant difference in the total number of grammatical errors among students from different class (Science, Art, and Commercial). As shown in Table 7, students in the Art class had the highest mean number of grammatical errors (M = 2.25, SD = 1.29), followed by Science (M = 2.00, SD = 1.41), and Commercial students (M = 1.58, SD = 1.56). However, the ANOVA result revealed that these differences was statistically significant influence of class stream, $F_{(2, 33)} = 0.669$, p = 0.42**.** Therefore, the null hypothesis is rejected. To ascertain the area of the difference, a post-hoc analysis was done.

Table 8: Post Hoc Tests

(I) Class	(J) Class	Mean Difference (I-J)	Sig.
SCIENCE	ART	-.250	.912
	COMMERCIAL	-.417	.776
ART	SCIENCE	.250	.912
	COMMERCIAL	-.667	.526
COMMERCIAL	SCIENCE	.417	.776
	ART	.667	.526

Data in Table 8 shows a post hoc Scheffé test was also conducted to examine pairwise differences. The result showed no significant differences between any of the class streams ($p > 0.05$ for all comparisons). This suggests that class has no significant influence on the frequency of grammatical errors made by senior secondary school students in this study.

Discussion and Conclusion

The first finding of this study revealed that out of 70 grammatical errors committed by senior secondary school students in Ilorin, Nigeria, 31.4 % were tense errors, 20.0 % were subject–verb agreement errors, 21.4 % were article errors, 14.3 % were preposition errors, and 12.9 % were pronoun errors. This indicates that tense errors were the most frequent category of errors committed among SS2 students, while pronoun errors were the least frequent among the students. This finding might have been as a result students' lack of understanding of the relationships between tense and aspect and as such, they could not properly position appropriate tense for verbs. This finding is in line with the findings of Maiguero, Tankari, and Allagbé (2021), who identify tense errors as the most prevalent error type among students. Conversely, this finding departs from the study of Onebunne and Ubaka (2020), where it was observed that subject–verb agreement errors were most frequent compared to tense errors among students.

The second finding of this study revealed that tense errors were frequently made by male students', whereas article errors were frequently made by female students. On the one hand, this finding might be as a result of the nature of male gender which underscores their interest in communicativeness, rather than grammaticalness. To them, so far their meanings are conveyed, they donot bother about the grammar. On the other hand, females tend to be more interested in the sophistication of their speeches, rather than focusing on the appropriate use of grammatical elements such as articles. This finding is in tandem with Bacia (2023) who documented pervasive inconsistency in use of tense among the male students. The finding, however, refutes a study by Sugianto, Rahman, and Putera (2022), who found no statistically significant gender differences in overall linguistic error frequencies including tense errors in writing.

The third finding of this study revealed that tense errors were common in both Science and Art streams, while subject-verb agreement errors were most frequent among Commercial students, with pronoun errors being the least frequent in the Commercial class and agreement and preposition errors lowest in the Science and Art streams respectively. This finding aligns with Nwanna (2024), who reported that tense errors constituted the largest proportion of students in Science class.

Based on the findings of this study, it can be concluded that senior secondary school students in Ilorin, Kwara State, Nigeria, exhibit a clear pattern of grammatical difficulties in essay writing, with tense errors occurring most frequently, followed by subject–verb agreement errors, article errors, preposition errors, and pronoun errors. This distribution of error types was influenced by gender and class in specific respects—male students commit more tense errors whereas female students were more prone to article errors—while the Science and Art streams show a higher incidence of tense errors and Commercial students demonstrated a greater tendency toward agreement errors. It can also be concluded that pronoun errors were the least common among Commercial students, and that agreement and preposition errors occur least often in the Science and Art streams respectively. Judging by the outcome of this study, a conclusion can be drawn that neither gender nor class exerts a statistically significant effect on the total frequency of grammatical errors committed.

Recommendations

Based on the findings of this study, the

following recommendations are proposed:

1. The Ministry of Education and school administrators should organise targeted in-service training for English teachers focusing on strategies to identify and remediate tense errors, subject–verb agreement, articles, prepositions, and pronouns to reduce the overall frequency of grammatical errors. Government should be more specific in their policy provisions towards English language development, especially in the area of errors.
2. Teacher-training programmes and classroom support systems should maintain a gender-inclusive approach, since male and female students commit grammatical errors at comparable overall rates, ensuring equal access to corrective feedback and learning materials. Teachers should be better strengthened on how to effectively guide on correct English usage.
3. Educational policymakers and school leaders should standardise grammar-enhancement interventions across all classes, irrespective of class level, by integrating continuous formative assessment of writing and error-correction activities into the Senior Secondary English curriculum.

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Assessing Influence of Electronic Messaging on Writing Skills of Senior Secondary School Students in an AI-Driven Era in Osun State

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Abstract

The study examined the forms of electronic messaging among senior secondary school students in Osun State, and assessed the writing skills of the students. These were with a view to providing information on forms of electronic messaging and writing skills of students. The study adopted descriptive survey research design. The population for the study comprised all the senior secondary school students in Osun State. The sample for the study consisted of 600 Senior Secondary School (SSII) students who were selected using multistage sampling procedure. Two research instruments were used for the study, namely: English Essay Writing Test (r=) and Electronic Messaging Questionnaire (r=). The data collected were analysed using mean, frequency counts, and percentages. The results showed the major forms of electronic messaging, initialism 60.7%, absence of verb in sentence 60.7%, and contractions 59.9%. The results on the writing skills of the students showed 7.5% used abbreviation, 5.8% did not use tense appropriately. 6.7% punctuation, 6.7% wrongly used capitalization, 9.2% used logogram, 6.7% used contraction, and 10.0% used non-standard spelling. The study concluded that electronic messaging could not be a factor in the writing skills of Senior Secondary School Students in Osun State.

Key words: Electronic messaging, writing skills, AI-driven era, Osun State

Introduction

The ability to write effectively is a specific skill set that enables individuals to articulate their thoughts in a meaningful manner, utilizing a set of signs or symbols to represent language in a textual medium. Within the realm of teaching and learning English as a second language (ESL), writing is widely recognized as a crucially essential skill. It plays a significant role in enhancing other language skills such as listening, speaking, and reading, as these skills are interconnected (Saed & Al-Omari in Yunus, & Chien 2016). Writing, as a skill, involves expressing ideas, thoughts, and emotions through written symbols, aiming to ensure that the conveyed ideas are comprehensible to individuals or readers.

Students' proficiency in writing has several advantages. First, writing serves as an effective means to enhance vocabulary and grammatical skills, thereby contributing to an overall improvement in language proficiency. Secondly, it functions as a crucial tool that supports the development of other language skills. A student with strong writing abilities can articulate and comprehend spoken and written texts more effectively. Consequently, writing becomes a gateway to engaging with modern information technology and expanding ones' knowledge particularly in an Artificial Intelligence era. A cursory examination of the West African Examination Council (WAEC) syllabi for 2021-2025 underscores the allocation of marks across various aspects of the English language.

Essay/letter writing	50 marks
Comprehension	20 marks
Summary	30 marks
Total	100 marks

This analysis leads to the deduction that, despite essay and letter writing constituting 50 marks, equivalent to 50% of the total marks in English Language Paper One, the skill of writing is integral to the other two components, namely comprehension and

summary. Consequently, it can be implied that a student lacking proficiency in writing, would likely struggle across all three sections of the Paper One. This deficiency in writing skills could significantly diminish the chances of success in the examination for such a student.

Ezeokoli and Igubor (2016) remarked that writing is one of the constant tasks that is demanded of students in schools. In the context of Nigeria, research on the teaching of writing, has predominantly centered around quasi-experimental studies aimed at improving writing instruction through diverse methods and strategies. Marking of English essays of senior secondary school students in Osun State gives teachers of English problems as there were lots of strange spellings, words written in mother tongue and other errors which lead to reduction of marks. The introduction of smartphones has also compounded the problems (Odeleye & Adetuyi 2018).

Over the years, researchers have shown that using technological tools such as the internet, computer, and phones have contributed so much to students' academic endeavours and more particularly their day to day writing of English Language. In recent years, the internet has emerged as a significant new technology, introducing novel forms of communication. Termed as 'media-written interaction' or 'new written interaction,' facilitated by the internet, it has given rise to fresh linguistic style variations and communication channels (Thurlow, 2016). Within the realm of education, these new communication tools are increasingly considered indispensable.

Electronic communication has significantly influenced how students use language, particularly in an educational context (Barasa, 2013). This impact has given rise to a novel form of language known as 'Texting' or 'Chat Language.' Over the past two decades, texting has evolved as a prevalent mode of communication, particularly among adolescents and the youth, prompting concern among researchers and educators. Teachers, in particular, express apprehensions about the potential impact of texting on students' performance, particularly in writing skills. Texting which is rooted in standard language, mimics colloquial spoken language (French, 2018). This form of communication employs acronyms and simplified spellings to facilitate efficient typing on mobile devices. In essence, the net generation has adapted standard English words, using abbreviations (e.g., 'brb' for 'be right back'), omitting non-essential alphabets (e.g., 'wud' for 'would'), substituting homophones (e.g., 'gr8' for 'great'), and downplaying proper punctuation and capitalisation.

In a study by chijioke & Nwala (2020), chat language represents a novel form of writing, necessitating the creation of new words by social media users to enhance communication. This emerging jargon, in reality, shapes new writing norms, thereby influencing the formal language used by students (Danseih & Solomon, 2020). Research studies have indicated that students exhibit weaknesses in written English (Ezeokoli & Igubor, 2016). WAEC examiners have identified several issues, including inadequate paragraphing, subpar expression influenced by improper conduct, deficient usage of punctuation marks, challenges with tense usage, struggles with prepositions and articles, lack of understanding of the requirements of certain attempted questions, and an inability to construct simple and correct sentences.

Additionally, text messages sent via GSM can be highly coded and abbreviated, making it challenging for a third party to decipher. These abbreviations have the potential to negatively affect learners' language and ultimately influencing their writing skills. Teaching essay writing poses a challenge for educators, as they must devise methods to actively engage students' passive knowledge in writing skills and enhance their proficiency while addressing common errors. Despite possessing passive knowledge, a lot of

secondary school students struggle to produce error-free essays. The significance of this lies in poor writing skills being recognised as a primary contributor to the widespread failure of candidates in English language examinations.

Reports on students' writing skills in Osun State secondary schools consistently highlight deficiencies in this area. Fakeye (2010) emphasized the declining performance of students in English language writing tasks in secondary schools. It is evident that success in English language examinations is contingent upon proficiency in writing tasks, including summary writing. Fakeye (2012) concluded that the report highlighted students' failure due to various deficiencies, including weak writing skills, the construction of loose sentences, translation from the mother tongue, and the violation of basic grammar rules. The errors made by candidates encompassed incorrect spellings, improper concord usage, tense-related mistakes, and incorrect verb construction. Additionally, the use of texting language style, which unintentionally interferes with formal writing spellings, contributed to the challenges faced by students.

The contemporary youths inhabit a world shaped by the dynamics of electronic messaging which influence their communication patterns and writing styles. Electronic messaging has emerged in response to social needs, emphasizing the importance of convenient and swift communication. Among the youths and adolescents, electronic messaging is particularly pervasive due to the easily accessible forms of interaction it offers. Nigerian youths and adolescents, as integral members of the global community, actively contribute to popularizing the social use of texting and have developed linguistic and manual proficiency in composing messages.

The exposure to electronic messaging is exerting a negative influence on students' academic writing in the classroom (Thurlow, 2016). This influence has shaped students' attitudes, leading them to believe that less effort is required in their formal writing. Consequently, they incorporate highly abbreviated forms of language, akin to their usage in short message service (SMS) texts, chats, or emails (Olusegun & Omotayo-Ojo, 2020). Abusa'aleek (2015) has identified this phenomenon as a new variety of English known as "textese." Students employ various techniques, including multilingualism, abbreviation, the use of numerals, graphones, single pronounceable letters, and other forms of words and phrase shortenings, also, the use of logograms, and symbols to represent words—collectively termed as alphanumeric blendings. Examples of such compositions include "4u" for "for you," "luv u" for "love you," "b4" for "before," and "2d8" for "to date" Endong (2014).

Texting is one of the most common forms of communication among young people that gained popularity with emergence of mobile technology (Ochonogor, Alakpodia & Achugbue, 2012). Since the development of this technology, numerous studies have been undertaken to assess the impact of texting on the academic performance of students. Cognitive psychologists such as Albert Bandura and Noam Chomsky have pointed out that texting during class has a detrimental effect on academic performance. The practice encourages multitasking, ultimately diminishing performance due to divided attention. Opponents of texting argue that it reduces productivity, result to poor performance, promotes bad grammatical structure and worsens the spelling skills of students. On the other hand, proponents argue that it helps students improve summarizing skills, increase creativity, sharpen communication skills and enhance reading skills (Dansieh, 2011). These symbols are employed to condense words, either through the representation of entire words or by using symbols that sound like syllables in a word (Iqbal & Safi, 2020).

Electronic messaging refers to an independent form of digital communication

designed for transmission by physical electronic devices. This communication encompasses various types of messages, including Short Message Service (SMS), Electronic Mail (Email), text messages, Instant Messages (IM), commands or requests to access a World Wide Web page, and video content—whether web-based, stored on a device, or accessed in any other manner (Samson, 2018). An electronic message can also be described as the standardized data in the form of document in which information is electronically assembled, sent, received or stored by equipment, including computers that are programmed to process information. According to Samson (2018), an electronic message is a process by which a message is transmitted via telecommunication networks to an electronic address, including but not limited to e-mail, SMS, MMS, Flash SMS, or fax. It is a means in which a message is sent through telecommunication process such as a text, sound, voice or image message, Facebook, Twitter, Instagram etc.

Text messaging language is gradually replacing standard English as the primary mode of communication via cell phones, evolving into a distinct form of language. This emerging language has a notable impact on the formal writing skills of learners (Akbar, AbdulKhaliq & Fazal, 2019). Text messaging has become a widely adopted means of communication, particularly among students, due to its convenience, speed, and cost-effectiveness. Rooted in modern technology, text messaging significantly influences academic writing in various aspects that are challenging to overlook. Notably, its impact is most prominent in the freestyle writing of the English language by students in higher classes who possess mobile phones (Akbar, AbdulKhaliq & Fazal, 2019).

Students often choose to send SMS messages in English on their mobile phones because it is perceived as easier, more precise, and exact. In the context of text messaging, students feel less inhibited by concerns about spelling and punctuation errors, contributing to enhanced confidence in using the English language (Akbar, AbdulKhaliq & Fazal, 2019). As of the end of 2010, SMS stood as the most widely used data application, boasting an estimated 3.5 billion active users, and/or approximately 80% of all mobile phone subscribers (Akbar, Abdul Khaliq & Fazal, 2019).

SMS, or Short Message Service, serves as a platform that enables users of mobile and portable devices to exchange brief written information or messages through cellular networks. In Africa, SMS messaging stands out as the most prevalent communication method, likely owing to its affordability and reliability. Texting involves the concept of Short Message Service (SMS), commonly known as short messaging (Faulker & Culwin, 2004) and it is meticulously related to instant Messaging (Goldstuck, 2006). It also includes messages sent through online applications such as Facebook, WhatsApp, 2go, Twitter, Google talk, Linkedin, Yahoo Messenger, email, Viber, Wechat, Telegram among others. Nevertheless, text messages have indirectly contributed to the development of abbreviations and the practice of texting as a means to shorten words while writing (Taiwo, 2009 & Samson, 2018).

Oluga & Babalola (2013) outlined several adverse effects of SMS on the writing abilities of Nigerian students. They observed that those who frequently engage in SMS language often unconsciously incorporate abbreviated forms of words into formal written communication, such as application letters for employment or essays for examinations. Consequently, words like 'that,' 'this,' 'what,' 'because,' and 'people' are erroneously written as 'dat,' 'dis,' 'not,' 'bcs,' and 'pple,' respectively. Such errors, especially in application letters, are deemed detrimental as they create an unfavorable impression of the writer.

Statement of the Problem

There is a noticeable decline in English writing skills among students in Osun State, potentially linked to their frequent use of social networking sites and chat language. Recent academic works of students have exhibited several traits associated with chat language, leading to a decline in writing proficiency at the secondary school level. According to the WAEC Examiners' report (2021), common issues include the improper use of the personal pronoun 'I,' failure to meet the required word count on essay topics, illegible handwriting, spelling errors, incorrect use of 'cause' instead of 'because,' confusion between 'there' and 'their,' and a poor understanding of basic English rules. Students often blur the lines between formal English and the very informal SMS language, leading to numerous spelling and grammatical errors in assignments and tests. The language use in texting does not adhere to grammatical rules, being formal or non-formal with words spelled as spoken. Consequently, students face penalties when incorporating texting language in academic writing.

Achieving the goal of having students produce well-organized, neat, and error-free pieces of writing has always been the lifelong dream and ambition of English Second Language (ESL) teachers. Unfortunately, many secondary school students struggle to write essays devoid of various types of errors. While scholars have engaged in research on internet linguistics from both linguistic and sociolinguistic perspectives, little attention is given to essay writing in schools, which has been linked to low performance in senior secondary school students' writing skills. The scarcity of empirical investigation on the influence of electronic messaging on the writing skills of senior secondary school students in Osun State, particularly on texting, underscores the need for this study.

Objectives of the Study

The purpose of the study was to examine the influence of electronic messaging on senior secondary school students' writing skill in Osun State. The specific objectives of the study are:

(i) examine the forms of electronic messaging among senior secondary school students in Osun State;
(ii) assess the writing skills of senior secondary school students in the study area;

Research Questions

The following research questions were asked and answered.

i. What are the forms of electronic messaging found among senior secondary school students in Osun State?
ii. What are the writing skills of senior secondary students in Osun State?

Methodology

The study adopted the descriptive survey research design. The population for the study comprised all the senior secondary school students in Osun State. There are 488 public secondary schools in Osun State with 85,164 senior secondary school students as documented by the Osun State Ministry of Education's Medium Term Sector Strategy (2025). A sample of 600 SS II students was selected using the multistage sampling procedure. Six Local Government Areas (LGAs) were selected from one of the senatorial districts in Osun State using simple random sampling technique. From each LGA, five senior secondary schools were selected using simple random sampling technique, making 30 schools altogether.

From each of the selected school, 10 SS II males and 10 SS II females were selected using purposive sampling technique making a total of 600 students. Two research instruments were used to collect data for the study; namely: English Essay Writing Test (r=), Electronic Messaging Questionnaire (r=), Data collected were analysed using mean, frequency counts,

and percentages. For research question one, the coded responses for each student were subjected to mean, frequency counts and percentages. Research question two was analysed using frequency counts and percentages by marking and scoring the components of writing skills.

Results

Research Question *One:* What are the forms of electronic messaging found among senior secondary school students in Osun state?

In answering this question, responses to items on the forms of electronic messaging found among senior secondary school students in Osun State were coded '1' for 'Never', '2' for 'Rarely', '3' for 'Sometimes', and '4' for 'Always'. The coded responses for each student were subjected to mean, frequency counts and percentages. The result is presented in Table 1

Table 1
Frequency Distribution of the forms of electronic messaging found among senior secondary school students

S/N	ITEMS	Always		Sometimes		Rarely		Never	
		F	%	F	%	F	%	F	%
1.	I send electronic messages to people	233	39.6	84	14.3	146	24.8	125	21.3
2.	I abbreviate words when I send electronic messages	212	35.7	137	23.1	59	4.3	186	13.4
3.	I use logogram (words combined with number) when sending electronic message such as 18tr, b4, 2geda, etc	224	38.1	144	24.5	63	10.7	157	26.7
4.	I use initialisms such as brb, lol, syl.	364	60.7	139	23.2	32	5.3	65	10.8
5.	I use contractions when sending electronic messages such as tmrw, recvd, nw.	330	59.9	97	17.6	6	1.1	118	21.4
6.	I use non-standard spellings such as skool, fone, thanx, etc.	230	41.3	103	18.5	57	10.2	167	30.0
7.	I use shortenings such as exam, phone, etc.	182	31.0	126	21.4	67	11.4	213	36.2
8.	I put punctuation marks when I write; such as writing im for I'm, Its for It's	146	24.8	125	21.3	84	14.3	233	39.6
9.	I use capital letters to write everything I write	57	9.6	210	35.4	175	29.5	152	25.6
10.	I use small letters to write everything I write	224	38.1	144	24.5	63	10.7	157	26.7
11.	I use phonetic replacement when sending electronic messages, such as ur for your, u for you, tk for take, etc.	124	21.1	90	15.3	84	14.3	291	49.4
12.	I do not put verbs in my sentence.	364	60.7	139	23.2	32	5.3	65	10.8
13.	I reduce words when writing electronic messages such as acc for account, sch for school, etc.	276	46.4	153	11.1	66	4.8	100	7.2
14.	I do not check the spellings of the words that I write when sending electronic messages.	212	35.7	137	23.1	59	4.3	186	13.4
15.	I put paragraphs when I send electronic messages.	399	68.4	78	13.4	46	7.9	60	10.3

Field Survey: 2025

The table presents the forms of electronic messaging used by senior secondary school students in Osun State. Findings show that 233 students (39.6%) always sent electronic messages, 84 (14.3%) sometimes did, 146 (24.8%) rarely did, while 125 (21.3%) never did. Regarding word abbreviation, 212 students (35.7%) always abbreviated words, 137 (23.1%) did so occasionally, 59 (4.3%) rarely, and 186 (13.4%) never abbreviated. Logograms (e.g., 18tr, b4, 2geda) were always used by 224 students (38.1%), sometimes by 144 (24.5%), rarely by 63 (10.7%), and never by 157 (26.7%). Initialisms such as brb, lol, syl were the most common, with 364 students (60.7%) using them always, 139 (23.2%) sometimes, 32 (5.3%) rarely, and 65 (10.8%) never. Contractions like tmrw, recvd, nw were always used by 330 students (59.9%), sometimes by 97 (17.6%), rarely by 6 (1.1%), and never by 118 (21.4%).

Non-standard spellings (e.g., skool, fone, thanx) were adopted always by 230 students (41.3%), sometimes by 103 (18.5%), rarely by 57 (10.2%), and never by 167 (30.0%). Shortenings like exam, phone were always used by 182 students (31.0%), sometimes by 126 (21.4%), rarely by 67 (11.4%), while 213 (36.2%) never used them. Punctuation use (I'm → Im; It's → Its), 146 students (24.8%) always used them, 125 (21.3%) sometimes, 84 (14.3%) rarely, and 233 (39.6%) never did. Capitalization was less common, with 57 students (9.6%) always writing in all caps, 210 (35.4%) sometimes, 175 (29.5%) rarely, and 152 (25.6%) never. Conversely, writing entirely in lowercase was always practiced by 224 students (25.6%), sometimes by 144 (24.5%), rarely by 63 (10.7%), and never by 157 (26.7%).

Phonetic replacements (e.g., ur → your, u → you) were always used by 124 students (21.1%), sometimes by 90 (15.3%), rarely by 84 (14.3%), while 291 (49.4%) never used them. Omitting verbs was reported by 364 students (60.7%), 139 (23.2%) did so sometimes, 32 (5.3%) rarely, and 65 (10.8%) never. Word reduction (e.g., acc → account, sch → school) was always practiced by 276 students (46.4%), sometimes by 153 (11.1%), rarely by 66 (4.8%), and never by 100 (7.2%). Spellings was often neglected, as 212 students (35.7%) never checked, 137 (23.1%) sometimes neglected, 59 (4.3%) rarely neglected, while 186 (13.4%) always checked. Paragraphing was widely observed, with 399 students (68.4%) always structuring their texts, 78 (13.4%) sometimes, 46 (7.9%) rarely, and 60 (10.3%) never doing so.

In summary, a significant proportion of students frequently engaged in practices such as abbreviations, logograms, initialisms, contractions, non-standard spellings, shortenings, lowercase writing, omission of verbs, word reduction, and neglecting spelling checks, while most structured their messages with paragraphs. However, many students avoided punctuation use, fewer used capital letters consistently, and phonetic replacement was less common.

Research* Question *Two: What are the writing skills of senior secondary school students in Osun state?

In answering this question, the information collected from the essays written by the students were marked and scored, the components of writing skills and forms of electronic messaging found in their writing were synthesized, and coded. Students with omission of paragraphs were coded '1', those who did not use punctuation' were coded '2', '3' for 'contractions', '4' for 'Non-standard spelling', 5 for 'Capitalisation', 6 for 'Abbreviation', '7' for' 'logogram', 8 for phonetic replacement, 9 for wrong use of punctuations, 10 for initialism, 11 for tense errors and 12 for reduction. The coded responses for each form of electronic messaging were subjected to frequency counts and percentages.

Table 2.2.
Frequency Distribution of the writing skills of senior secondary school students in Osun state

S/N	ITEMS	FREQUENCY	PERCENTAGE
		F	**%**
1.	Abbreviation	45	7.5
2.	Tense Error	35	5.8
3.	Lack of Punctuation	40	6.7
4.	Poor Paragraphing	65	10.8
5.	Capitalisation	40	6.7
6.	Logogram	55	9.2
7.	Initialism	50	8.3
8.	Contractions	40	6.7
9.	Non-standard spelling	60	10.0
10.	Wrong Use of Punctuation	45	7.5
11.	Phonetic replacement	75	12.5
12.	Reduction	50	8.3
	Total	**600**	**100.0**

Table 2. shows the writing skills of senior secondary school students in Osun state. From Table 4.2, 7.5% of the students used abbreviation. Also, 5.8% did not use tense appropriately. Also, 6.7% did not use punctuation. 10.8% of the students did not put paragraph. The Table also revealed those who wrongly used capitalization to be 6.7%. In addition, 9.2% used logogram, 8.3% used initialism, and 6.7% had contractions in their writings. Non-standard spellings were used by 10.0% of the students, then, 7.5% used punctuation wrongly. It was found that students representing 12.5% used phonetic replacement, and 8.3% used reduction.

Discussion of the Findings

From the results of the analysis of the research question one on the forms of electronic messaging found among senior secondary school students in Osun State. It was found that abbreviation, logogram, initialism, contraction, wrong use of punctuation, non-standard spellings, shortenings, lack of punctuation, capitalisation, phonetic replacement, reduction, and paragraphing were the forms of electronic messaging in the study area. Although, there were inconsistency in the use of these forms but it indicated that most of the students had used these electronic messaging while sending messages on their phones always or sometimes. The result is in conformity with Wood et al (2014) who also observed the increase in the use of text messaging. Also, Akbar, Abdul Khaliq & Fazal (2019) who found out that the prominent influence of text messaging is freestyle writing of the English language by students belonging to high and higher classes who possess mobile phones.

The result of research question two, revealed that abbreviation, logogram, initialism, contractions, non-standard spellings, wrong use of punctuation, capitalization, phonetic replacement, reduction, poor paragraphing, lack of punctuation, and tense error were the main writing skills found in the study area. It can be deduced that most of the students did not put paragraphs and their essays reflected phonetic replacement. This is likely to be one of the influence of electronic messaging on the students.

Based on this analysis, it could be summarized that electronic messaging has unnoticeable impact on the writing skills of senior secondary school students in Osun

State. The implication is that, the world is turning to a global village in the use of technology. This could be attributed to how electronic messaging is influencing the writing skills of the students in this case. While little could be done to stop the influence of electronic messaging on students' writing skills in this fast-growing technological world, it is essential to help the students on the appropriate use of these electronic messaging to bring about positive result in their writing skills. This study is in line with Van Dijk, Van Wittlebostuljin, Vasic, Avrutin and Blom (2016) that found the surge in the use of mobile phones to influence writing skills greatly. These findings also confirmed the electronic messaging forms of students as revealed by the findings of the first objective and first research question.

Conclusion

The study concluded that most of the students used forms of electronic messaging while sending messages but has unnoticeable influence on the writing skills of senior secondary school students in Osun State.

Recommendations

1. Teachers should discourage their students from using electronic messaging in their assignments, and school works.
2. Parents should encourage their children to always write the messages they send on their phones correctly.
3. Regular essay writing exercises of various kinds should be practised by the students.
4. Teachers should ensure that essays given to students are marked and any form of electronic messaging found in their work are corrected.

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Exploring the Balance Between Human Teachers and AI Tutors in the Language Classroom

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Abstract

This study investigated the balance between human teachers and AI tutors in the language classroom, examining how both complement each other in enhancing learning outcomes. Using a qualitative approach, data were collected through classroom observations and semi-structured interviews with 15 language teachers who had experience in using AI tutoring systems and 40 learners who engaged with AI-based tutoring tools. Findings revealed that while AI tutors excelled at providing instant feedback, personalized practice, and adaptive assessment, human teachers remained important for fostering motivation, cultural understanding, and critical thinking. The conclusion emphasized the importance of a complementary model in which AI handled repetitive instructional tasks such as grading, content delivery and practice exercises, while teachers concentrated on higher-order pedagogical functions. The study recommended teacher training in AI integration and a human-centered approach that positions AI as a supportive tool rather than a substitute.

Keywords: Artificial Intelligence, Language learning, Human teachers, AI tutors, Language classroom.

Introduction

The rapid growth of artificial intelligence (AI) in education has brought new opportunities for transforming teaching and learning practices, particularly in the language classroom. Over the last decade, technological advancements have made AI systems more intelligent, interactive, and adaptive to the needs of learners. Luckin (2018) notes that AI systems can provide adaptive and personalized learning experiences that respond to the unique needs of individual learners. These tools are able to supply immediate feedback, track learner progress, and deliver interactive content that support independent learning. This adaptability is particularly valuable in language learning, where students progress at different paces and often require individualized practice beyond the classroom.

In addition to adaptability, AI teachers have been recognized for their efficiency in automating time-consuming instructional tasks. Holmes et al. (2022) explain that AI teachers can reduce the workload of teachers by handling routine and repetitive activities such as grading, assessment, and grammar correction. For instance, AI-powered applications like Grammarly and automated essay scoring systems allow students to receive instant corrective feedback, which in turn provides teachers with more time to focus on higher-level instructional responsibilities. By facilitating targeted practice and enabling continuous feedback loops, AI teachers contribute to a more learner-centered approach to education.

Despite these benefits, concerns have been raised regarding the limitations of AI when compared to human teachers. Selwyn (2019) emphasizes that teaching is not only about knowledge delivery but also about fostering relationships, providing emotional support, and creating meaningful social interactions. These are aspects of pedagogy that AI systems, despite their sophistication, struggle to replicate. In the context of language learning, the human element becomes even more indispensable, since learning a language is not only a cognitive process but also a deeply social and cultural one. Learners acquire communicative competence not merely by mastering vocabulary and grammar but by

engaging in authentic conversations, interpreting social cues, and developing intercultural awareness.

Zawacki-Richter et al. (2019) argue that while AI systems can assist with technical skills such as vocabulary acquisition, pronunciation drills, and basic grammar exercises, they cannot replicate the empathy, motivational strategies, and cultural sensitivity that human teachers bring to the classroom. In many cases, students require encouragement, contextual examples, and cultural explanations that AI systems are not adequately equipped to provide. Warschauer and Liaw (2019) also add that human teachers remain central to promoting creativity, collaboration, and critical thinking, all of which are vital for learners in a globalized world. These dimensions underscore the irreplaceable role of teachers in shaping holistic educational experiences.

Consequently, researchers suggest that the debate should not revolve around whether AI will replace teachers but rather how AI and teachers can complement one another. Zhao (2021) points out that AI should be seen as a supportive partner that enhances the teacher's capacity instead of substituting their expertise. The integration of AI into language learning should therefore emphasize augmentation rather than replacement. This perspective suggests a model in which teachers are able to devote more time to interactive, creative, and higher-order instructional tasks, while AI tutors manage personalized drills, adaptive assessments, and other individualized learning supports.

Lin and Warschauer (2023) further observe that sustainable approaches to language teaching in the twenty-first century will require frameworks were teachers and AI tutors function collaboratively. They highlight that AI systems can support learning by reducing inequities in access to resources, while teachers ensure that instruction remains human-centered and contextually relevant. This complementary framework recognizes that both entities have unique strengths: AI excels in efficiency, scalability, and personalization, whereas teachers excel in emotional intelligence, contextual adaptability, and cultural interpretation.

Despite these insights, studies reveal a promising yet incomplete picture of the evolving relationship between human teachers and AI tutors. While AI offers efficiency, scalability, and personalization, human teachers provide empathy, cultural mediation, and the ability to foster creativity and collaboration. Striking a balance between these two roles is increasingly recognized as essential, but the pathways to achieving such a balance remain underexplored. There is therefore a pressing need for research that investigates how the complementary strengths of teachers and AI tutors can be integrated in practical, sustainable, and learner-centered ways within the language classroom.

Research Objectives

The main objective of this study is to explore the balance between human teachers and Ai tutors in the language classroom. In a specific term, the objectives are to:

i. examine the comparative strengths and limitations of AI tutors and human teachers in supporting language learning;
ii. investigate how a complementary model of AI tutors and human teachers can enhance learner-centred, sustainable language education.

Research Questions

1. What are the relative strengths and limitations of AI tutors and human teachers in the language classroom?
2. How can AI tutors and human teachers be integrated in complementary ways to support learner-centred and sustainable language education?

Literature Review

Historical Evolution of AI Use in Language Classrooms

The integration of Artificial Intelligence (AI) into education has followed a

gradual but significant trajectory, with its application in language classrooms evolving alongside technological advancements. Early uses of AI in education emerged in the 1960s and 1970s with the development of **computer-assisted instruction (CAI)** and **intelligent tutoring systems (ITS).** Pioneering programs such as PLATO (Programmed Logic for Automated Teaching Operations) introduced learners to basic computer-mediated drills, particularly in grammar and vocabulary acquisition, though they were limited in interactivity and adaptability (Carbonell, 1970). These early systems reflected the behaviorist learning paradigm, focusing primarily on repetition and reinforcement rather than deeper communicative engagement.

By the 1980s and 1990s, advances in natural language processing (NLP) expanded the potential of AI in supporting second language acquisition. Intelligent tutoring systems became more responsive, offering individualized feedback and branching instructional pathways. For instance, researchers began experimenting with adaptive algorithms that adjusted tasks based on learner performance, marking a shift from static drill-and-practice to more dynamic instruction (Anderson, Corbett, Koedinger, & Pelletier, 1995). These developments mirrored broader cognitive learning theories, emphasizing learners' active engagement with content and gradual scaffolding of skills.

The early 2000s saw a major transformation with the rise of **web-based AI applications**. Online language learning platforms increasingly embedded AI functions such as automated essay scoring and speech recognition to facilitate speaking practice and written feedback. Warschauer (2004) observed that computer-mediated communication tools began to blur the boundaries between classroom learning and authentic language use, enabling students to interact with digital tools beyond traditional settings. The introduction of automated writing evaluation systems, such as the Educational Testing Service's e-rater, illustrated the growing reliance on AI to handle large-scale assessment tasks in language education (Shermis & Burstein, 2003).

In the 2010s, advances in **machine learning and adaptive learning platforms** transformed AI from supportive add-ons into integral components of language education. Luckin (2018) noted that these systems began providing personalized learning experiences, continuously adapting to individual learners' needs. This adaptability was particularly valuable in language classrooms, where students often progress at varying paces. AI-powered applications such as Grammarly and Duolingo became popular for their ability to supply real-time feedback, track learner progress, and motivate independent study through gamification (Warschauer & Liaw, 2019).

More recently, the emergence of **deep learning, neural networks, and conversational AI** has ushered in a new era of AI use in language classrooms. The rise of advanced chatbots and large language models has created opportunities for learners to engage in simulated conversations, practice authentic dialogues, and receive context-sensitive feedback. Lin and Warschauer (2023) emphasized that sustainable approaches to language teaching in the twenty-first century now require frameworks where human teachers and AI tutors collaborate rather than compete. This contemporary shift highlights a vision of augmentation, in which AI supports personalization, efficiency, and accessibility while human teachers preserve the social, cultural, and affective dimensions of language learning (Zawacki-Richter, Marín, Bond, & Gouverneur, 2019).

In all the historical trajectory of AI in language classrooms demonstrates a movement from **behaviorist drill-based programs to adaptive, communicative, and collaborative frameworks**. While early systems emphasized efficiency and repetitive practice, contemporary AI technologies are increasingly positioned as partners that complement the

irreplaceable human elements of teaching.

Rationale for Exploring the Balance Between AI Tutors and Human Teachers

The increasing presence of Artificial Intelligence (AI) in education has reshaped the dynamics of teaching and learning, particularly in language classrooms. AI-driven tools such as intelligent tutoring systems, grammar checkers, and automated feedback applications have demonstrated the ability to provide adaptive and personalized instruction. Luckin (2018) explained that such technologies can adjust to learners' individual needs, offer immediate corrective feedback, and enhance independent learning, making them valuable supplements in diverse classroom contexts. Similarly, Holmes, Bialik, and Fadel (2019) highlighted that AI tutors help reduce the administrative and repetitive workload of teachers, enabling them to dedicate more time to higher-order instructional tasks. These benefits illustrate the efficiency of AI tutors in addressing technical and individualized aspects of language learning.

Despite these advantages, scholars caution against over-reliance on AI systems. Selwyn (2019) emphasized that teaching is not solely about delivering knowledge but also about cultivating relationships, offering emotional support, and facilitating meaningful human interaction. In language education, where communication and cultural awareness are central, the absence of human empathy and contextual understanding presents a major limitation of AI tutors. Zawacki-Richter, Marín, Bond, and Gouverneur (2019) similarly argued that while AI can support vocabulary acquisition and grammar practice, it cannot replicate the motivational strategies, intercultural sensitivity, and nuanced guidance that teachers provide. Warschauer and Liaw (2019) further contended that teachers remain indispensable in fostering creativity, collaboration, and critical thinking—competencies that are essential for learners navigating global and multilingual environments.

For this reason, many scholars propose that the conversation should not center on whether AI will replace teachers but on how both can complement one another. Zhao (2021) pointed out that AI should be viewed as a supportive partner that extends the teacher's capabilities rather than undermines them. In line with this view, Lin and Warschauer (2023) argued that sustainable approaches to language teaching require frameworks in which AI tutors and human teachers function collaboratively. Such hybrid models acknowledge the respective strengths of both: AI excels in efficiency, personalization, and scalability, while teachers excel in empathy, contextual adaptability, and human connection.

The rationale for exploring the balance between AI tutors and human teachers, therefore, lies in the need to design pedagogical approaches that maximize the strengths of both without compromising educational values. Striking this balance is particularly important in language learning, where learners require not only technical proficiency but also cultural competence and communicative confidence. Investigating this balance will provide valuable insights into how AI and human teachers can work together to create learner-centred, ethically sound, and sustainable models of education.

Human Teachers vs. AI Tutors: Points of Tension

Efficiency vs. Empathy

One of the most notable tensions between AI tutors and human teachers lies in the contrast between efficiency and empathy. AI systems excel at processing large volumes of data, automating grading, and delivering immediate feedback to learners (Holmes, Bialik, & Fadel, 2019). For example, grammar correction tools and automated essay scoring systems allow students to receive instant responses, thereby accelerating the learning process. However, as Selwyn (2019) emphasized, teaching is not only about efficiency but also about nurturing

relationships, offering encouragement, and responding to learners' emotional needs. While AI can streamline routine aspects of instruction, it cannot replicate the compassion and motivational support that learners often require in order to sustain engagement and confidence, particularly in language learning contexts.

Standardization vs. Contextualization

AI tutors are often designed around standardized algorithms that apply consistent rules across learners. This design ensures fairness and scalability, making personalized drills and assessments widely accessible (Luckin, 2018). Nevertheless, language learning is deeply contextual, requiring cultural interpretation, real-world examples, and sensitivity to learners' backgrounds. Zawacki-Richter, Marín, Bond, and Gouverneur (2019) argued that while AI can adapt tasks based on performance data, it remains limited in its ability to account for the nuanced cultural and situational contexts that shape language use. In contrast, human teachers are adept at situating learning within meaningful contexts, drawing on students' experiences, and adapting pedagogy to diverse classroom realities. This tension underscores the limits of standardized AI systems in addressing the complex and fluid nature of human communication.

Knowledge Transmission vs. Holistic Education

AI tutors are highly effective at transmitting discrete units of knowledge, such as vocabulary items, grammar rules, or pronunciation patterns. They specialize in delivering technical skills efficiently and consistently (Warschauer & Liaw, 2019). However, language education extends beyond knowledge transmission to include the development of creativity, collaboration, and intercultural competence. Human teachers, as Zhao (2021) noted, play a central role in fostering these holistic outcomes by encouraging critical thinking, facilitating authentic interaction, and guiding learners through complex social and cultural dimensions of communication. Unlike AI, which primarily focuses on measurable outputs, teachers support the broader aims of education—helping learners grow not only as language users but also as socially and culturally competent individuals.

Towards a Complementary Model

While tensions exist between the roles of AI tutors and human teachers, many scholars argue that the future of language education lies not in choosing one over the other but in fostering a model of complementarity. Rather than viewing AI as a replacement for teachers, it can be more productively understood as a partner that augments the teacher's role by handling routine tasks and offering adaptive support. Zhao (2021) emphasized that AI should be seen as a supportive tool that extends teachers' capabilities, freeing them to focus on higher-order pedagogical responsibilities such as cultivating creativity, critical thinking, and intercultural competence.

In this complementary framework, AI tutors can contribute by managing efficiency-driven aspects of instruction. For example, AI-powered applications are well suited for automated assessments, grammar correction, and personalized drills (Luckin, 2018). Such functions reduce teachers' workload and ensure that learners receive individualized practice and timely feedback. Meanwhile, human teachers bring essential qualities that AI cannot replicate, including empathy, cultural mediation, and the ability to respond dynamically to learners' social and emotional needs (Selwyn, 2019). This balance allows teachers to devote more time to interactive classroom activities, collaborative projects, and contextually rich discussions, which are indispensable for holistic language learning.

Lin and Warschauer (2023) further argued that sustainable approaches to language education in the twenty-first century require frameworks where AI systems and teachers collaborate rather than operate in isolation.

They suggested that AI can enhance access to resources and support learning equity, while teachers ensure that instruction remains human-centered and responsive to diverse cultural contexts. Zawacki-Richter, Marín, Bond, and Gouverneur (2019) similarly observed that a hybrid model maximizes the strengths of both entities: AI provides scalability and personalization, while teachers safeguard the relational and ethical dimensions of education.

Ultimately, the movement towards a complementary model reflects a shift from a competitive to a collaborative narrative. By aligning the efficiency of AI tutors with the empathy and contextual adaptability of human teachers, language classrooms can become more learner-centered, inclusive, and sustainable. Such a model not only addresses the limitations of both AI and human teaching when used in isolation but also promotes a more balanced and holistic vision of language education for the future.

Methodology

This study employed a **quantitative research design** to examine students' perceptions of the roles of human teachers and AI tutors in language classrooms. The choice of a quantitative approach was informed by the need to systematically measure and analyze participants' responses regarding the strengths, limitations, and integration of AI tutors and human teachers. Data were collected using a **structured questionnaire,** which contained items rated on a four-point modified Likert scale: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The questionnaire was designed by the researchers to capture students' perceptions of the relative effectiveness of AI tutors versus human teachers, as well as their views on how both could be integrated to enhance learner-centred and sustainable language education. A total of 60 undergraduate students who actively engaged with AI-based tutoring tools participated in the study, selected through a purposive sampling technique. The collected questionnaire responses were analyzed using **descriptive statistical tools**, including **frequency counts, percentages, mean, and standard deviation (SD)**, to summarize participants' perceptions across different items. These statistical methods allowed for the identification of trends, patterns, and variations in students' responses, providing a clear picture of how AI tutors and human teachers are perceived in terms of their strengths, limitations, and potential for complementary integration in the language classroom.

Analysis

Table 1: Section A: Relative Strengths and Limitations of AI Tutors and Human Teachers

No.	Statement	SA (%)	A (%)	D (%)	SD (%)	Mean	SD
1	AI tutors provide immediate feedback efficiently	90	5	5	0	3.85	0.48
2	Human teachers understand students' emotions better	70	10	15	5	3.45	0.92
3	AI tutors are more consistent in correcting errors	55	20	20	5	3.25	0.94
4	Human teachers adapt lessons flexibly	20	0	70	10	2.30	0.90
5	AI tutors provide unlimited practice opportunities	40	30	5	25	2.85	1.19
6	Human teachers foster critical thinking & creativity	45	35	10	10	3.15	0.96
7	AI tutors struggle with cultural context & real-world examples	35	20	45	0	2.90	0.89
8	Human teachers motivate students better	65	35	0	0	3.65	0.48
9	AI tutors provide personalized, data-driven recommendations	30	25	25	20	2.65	1.11
10	Human teachers provide richer classroom interaction	55	30	0	15	3.25	1.04

Section A of the study examined the relative strengths and limitations of AI tutors and human teachers in the language classroom. Analysis of the responses in table one reveals that students overwhelmingly agreed that AI tutors provide immediate feedback on grammar and vocabulary more efficiently than human teachers, with 90% strongly agreeing. The mean score of 3.85 and a low standard deviation of 0.48 indicate a strong consensus among respondents. This suggests that students perceive AI tutors as highly effective in delivering instant corrective feedback, which is critical for language learning. In contrast, human teachers were recognized for their ability to understand students' emotions and learning difficulties. Seventy percent of students strongly agreed, and the mean score of 3.45 shows moderate to high agreement, although a slightly higher standard deviation of 0.92 reflects some variation in perceptions. This shows that students value the emotional intelligence and personal guidance provided by human teachers. Regarding the consistency of error correction, 55% strongly agreed that AI tutors are more consistent than human teachers, but 25% of respondents expressed disagreement. The moderate mean of 3.25 and standard deviation of 0.94 indicate that while AI tutors are generally seen as consistent, student experiences vary. Similarly, AI tutors' ability to offer personalized, data-driven recommendations received mixed responses, with a mean of 2.65 and a relatively high standard deviation of 1.11, suggesting inconsistency in the perceived effectiveness of AI-driven personalization. Students reported less agreement with the flexibility of human teachers in adapting lessons to individual needs. Only 20% strongly agreed, while 70% disagreed, resulting in a mean of 2.30. This indicates that many students perceive human teachers as less adaptable compared to AI tutors in terms of lesson customization.

Human teachers were strongly acknowledged for their motivational abilities, with 65% of students strongly agreeing and a mean of 3.65. They were also credited with fostering critical thinking and creativity (mean = 3.15) and providing richer classroom interaction and peer collaboration opportunities (mean = 3.25). These findings emphasise the unique interpersonal and cognitive strengths of human teachers that AI tutors cannot fully replicate. AI tutors, however, were perceived as limited in providing cultural context and real-world examples, with only 35% strongly agreeing that they manage this effectively and a mean of 2.90. Similarly, the opportunity for unlimited practice, while valued, showed variation in responses (mean = 2.85, SD = 1.19), reflecting that not all students benefit equally from AI-based practice.

Table 2:
Section B: Integration of AI Tutors and Human Teachers

No.	Statement	SA (%)	A (%)	D (%)	SD (%)	Mean	SD
11	Combining AI tutors with human teachers enhances achievement	90	10	0	0	3.90	0.30
12	AI tutors reduce teachers' workload	70	25	5	0	3.65	0.57
13	Teachers focus on higher-order skills, AI tutors on drills	55	30	10	5	3.35	0.85
14	Integration supports personalized, learner-centred instruction	70	30	0	0	3.70	0.46
15	AI tutors provide after-class support	65	35	0	0	3.65	0.48
16	Human teachers guide responsible AI use	100	0	0	0	4.00	0.00
17	Collaboration fosters sustainable learning	100	0	0	0	4.00	0.00
18	Integration creates engaging, interactive environment	80	20	0	0	3.80	0.40
19	Teachers require training to integrate AI tutors	100	0	0	0	4.00	0.00
20	Integration prepares students for future learning environments	100	0	0	0	4.00	0.00

Table 2 focused on how AI tutors and human teachers can be integrated to enhance language learning outcomes, with students providing insights on complementary roles, collaboration, and future readiness. The table shows a strong consensus among students that combining AI tutors with human teachers enhances overall academic achievement. Ninety percent strongly agreed with a mean score of 3.90 and a low standard deviation of 0.30, indicating that most respondents perceive a significant benefit in leveraging both AI and human teaching approaches simultaneously. Students also recognized that AI tutors can reduce teachers' workload by handling repetitive exercises such as grammar drills and vocabulary practice. Seventy percent strongly agreed, 25% agreed, and the mean score was 3.65. While this indicates strong agreement, the slightly higher standard deviation of 0.57 suggests a minor variation in perception among students. Regarding instructional roles, students agreed that teachers should focus on higher-order skills like critical thinking and creativity, while AI tutors handle drills and practice. The mean score of 3.35, with 55% strongly agreeing, 30% agreeing, and some disagreement (15%), reflects a moderate consensus. This indicates recognition of a division of labour that maximizes the strengths of each approach.

Integration of AI and human teaching was also viewed as highly effective in promoting personalized, learner-centred instruction. Seventy percent strongly agreed, 30% agreed, and the mean of 3.70 with low SD (0.46) indicates general agreement that combining AI tutors' data-driven personalization with human teachers' adaptive guidance creates a more tailored learning experience. Similarly, students agreed that AI tutors provide valuable after-class support that complements classroom instruction, with 65% strongly agreeing and 35% agreeing, mean = 3.65. The findings further highlight the critical role of human teachers in guiding responsible use of AI in learning, as evidenced by 100% of respondents strongly agreeing, producing a perfect mean of 4.00 and SD of 0.00. Likewise, students unanimously agreed that collaboration between AI tutors and teachers fosters sustainable learning, emphasizing that blended approaches can make education more accessible and enduring. Integration was also perceived to enhance classroom engagement and interactivity (mean = 3.80), while teacher training was deemed essential for effective AI integration, with 100% strongly agreeing. Finally, students agreed that such integration prepares learners for future educational environments where human guidance and AI coexist, again with perfect consensus.

Discussion of Finding

The findings from the study on students' perceptions of AI tutors and human teachers in Nigeria's language classrooms align with recent research and educational initiatives. In a pilot program in Edo State, Nigeria, students participating in an after-school AI tutoring program achieved learning gains in six weeks that typically take two years of conventional schooling to attain. This demonstrates the effectiveness of AI tutors in providing immediate feedback and personalized learning experiences. However, students also acknowledged the limitations of AI tutors, particularly in providing cultural context and real-world examples. This aligns with findings from a study by Adolphs et al. (2018), which highlighted the importance of human teachers in delivering culturally relevant content. In the Nigerian context, human teachers play a crucial role in understanding students' emotions and fostering critical thinking and creativity. A study by Olaosebikan and Kolawole (2023) revealed that English teachers in Ibadan, Nigeria, use traditional approaches to teach students, emphasizing the importance of human interaction in the learning process.

The integration of AI tutors and human teachers was viewed positively by students, with 90% strongly agreeing that

combining AI tutors with human teachers enhances language achievement. This finding is supported by Wardat et al. (2024), which demonstrated that AI-enhanced high-dose tutoring can improve student performance. In the Nigerian context, initiatives such as as Afrilearn, which was established by Isaac Oladipupo and Gabriel Olatunji-Legend in 2019, while AltSchool Africa, which was founded in 2021 by Adewale Yusuf, Akintunde Sultan, and Opeyemi Awoyemi, are leveraging digital learning platforms to provide students with personalized learning experiences, complementing traditional classroom instruction. Students also recognized the importance of teacher training in effectively integrating AI tutors into classroom practice. This emphasises the need for professional development to ensure the effective use of AI in education. A study by Okoro (2025) discussed issues in English language curriculum implementation in Nigeria, emphasizing the need for teachers to acquire digital literacy to enhance the application of technology in teaching.

Conclusion

The paper concluded that both AI tutors and human teachers have unique and complementary roles in the language classroom. AI tutors are highly effective in providing immediate feedback, consistent error correction, and opportunities for additional practice, making them valuable tools for enhancing individual learning. Conversely, human teachers excel in understanding students' emotions, motivating learners, fostering critical thinking and creativity, and facilitating rich classroom interaction and collaboration. Students recognize that integrating AI tutors with human teachers enhances learning outcomes, supports personalized instruction, and prepares learners for future technology-enhanced educational environments. The results suggest that a balanced and strategic combination of AI and human teaching approaches can optimize learning experiences and foster sustainable language education in Nigerian secondary schools. **The paper therefore recommended that s**chools should adopt a complementary approach, where AI tutors handle routine drills and feedback while human teachers focus on motivation, critical thinking, and classroom interaction.

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Impact of Artificial Intelligence Development on Teaching and Learning of Literature

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Abstract

This study considers the impact of Artificial Intelligence (AI) development on teaching and learning of Literature. The introduction of Artificial Intelligence (AI) brings new discovery and transformation as technology advances. Literature as a field of study is concerned with arts, imaginative powers, feelings and peoples' experiences. Literature deals with the importance of human existence, culture and civilization. It is a mirror that reflects changes in the nature of humans. It inspires in considering existential moral and social issues. The study delves into how AI can assist in the development of teaching and learning of literature through advanced analysis tools and data- driven approaches with the arrival of new methodologies for analyzing and interpreting text and assessing the opportunities and challenges posed by AI. This study explores the abundant effects of AI in the development of teaching and learning of literature, the role of igniting societal change through the discovery of untapped knowledge. The study concludes that teachers and learners of literature should embrace the use of AI with the attendant opportunities and restrain from challenges (like fear of people that AI can take over their jobs. Also that AI cannot have emotions like human beings and that learners may be over dependent on AI and may not allow them to think out of box) until there are future solutions. The study recommends that for the development of teaching and learning processes, AI should be embraced. For every development it offers assistance.

***Keywords**:* Impact, Artificial Intelligence, development, teaching, learning, literature

Introduction

Artificial Intelligence (AI) technologies are rapidly advancing and reshaping various aspects of the life system and the literature field is not excluded. In everyday life, Artificial Intelligence is sporadically influencing creation of literary works and its criticisms. There is utmost need to understand how AI is transforming various aspects of literature and its full implications. We need to understand the processes and use of machines like: algorithms, natural language processing (NLP) and generative models which play a significant role in literary creations. There are new methodologies to analyze themes, styles and historical contents with the application or integration of AI tools like AI-driven writing written assistants.

According to a report by markets and markets the AI and education Market is projected to grow from $1.8 billion in 2022 to $6.7 billion by 2027, this growth reflects the increasing integration of AI tools and Technologies in educational settings, increased investment educational institutions and edtech companies are significantly investing in AI technologies. For instance, in 2021 over $16 billion was invested globally in edtech with a substantial portion directed towards aid driven solutions.

With the integration of AI, its importance and relevance goes beyond the use of advanced technological tools to literature but challenges the presence of existing literary texts in relation to their originality and value of the existence of literary texts. There is a new paradigm shift.

Adriana-Cecelia (2023) explained her quick and helpful assistance of Chat GTP to give her a fresher, more contemporary "for to see the light of print" "to be published online" or "to be digitally released". This is a reflection of the shift from the conventional print media to digital platforms with total

overhauling in the publishing sector in recent times. In addition, the lecturer can command the Chat GTP to teach a chosen topic in his voice with the use of a language of limited diffusion.(LLD)This makes the lecturer feel so empowered by AI.

Literature generally, is any written work directed at addressing peculiarities about a group of people who are bounded together by some values, including language, culture, historical antecedent, beliefs, folklores and any other socially unifying object. Literature is a piece of creative and imaginative work of art which mirrors life. Such pieces of writing, when done in English language would be referred to as Literature- in- English, the aim being to promote certain societal values while identifying the social vices for criticism and condemnation. Literature is also used for entertainment. Literature is a reflection of life in the sense that it is used to showcase pleasant and unpleasant experiences in the society to the reader

Literature is a work of art written through an author's imaginative powers as a means of expressing feelings, emotions, transmitting cultural values and norms. It serves as a powerful instrument of entertainment, relaxation and education. Literature- in English- is one of the significant Arts subjects in the Nigerian secondary school system. Without a credit pass in Senior Secondary Certificate Examination, National Examination Council National Business and Technical Examinations Board Certificate Examinations the candidate cannot gain admission into any tertiary institution.

Literature Review

Browne (2022) explained the role of AI in recent times in modern literary creation. He identified the advantages and qualities of AI help in assisting in creative process, content creation and questions the authenticity of contents generated by AI. Debarshi (2022) in her study, traced interactions between literatures and AI in comprehending and generating narratives with the use of machine intelligence. The study emphasized answers to questions like factors limiting the potentials

Abdulrahman (2024) affirms that AI has reshaped the education sector among literary studies. A lot of developments have cropped up through the integration of AI to reform the ability to transform and interpret literature work better.

Jebazelvi et.al. (2025) remarks that students are able to enhance and improve their personalized learning, analyze literary works through the use of modern AI platforms. Quoting them

"AI (AI) has completely changed the literary landscape by introducing sophisticated machine learning introducing sophisticated machine learning algorithms and natural language processing techniques. These algorithms have changed the creation of new works and their interpretation and distribution" (p.53).

The fast development of natural language processing, machine learning, and adaptive learning system, has created unprecedented opportunities for personalizing literature education. In addition to this, Kabudi et.al. (2021) submit that AI technologies like AI- powered tools function beyond supporting traditional methods but transform the field of literature education with the application of reading tools that identify patterns and intelligent tutoring platforms that identify individual learning styles. There is no doubt that AI boosts and increases learners' engagement but it cannot replace human qualities of interpretation and critical thinking that are of immense importance in literature studies.

According to Zhao (2024) the natural language system helps to provide insight to textual themes, stylistic characteristics, and character developments but is unable to express the emotions and cultural values embodied in literature. There are advantages and disadvantages with the use of AI in literature learning. Learners are able to develop

their creative abilities in analyzing and synthesizing through various strategies that give room for practicality.

Daghamin & Daghamin (2025) revealed in their study that students' who effectively engage AI tools integration in the study of literary texts were able to critically give human interpretation and analyze text .The study further reveals that students are able to preserve their individual - analytical interpretation coupled with the assistance of AI tools. This is to be specific that the students only have AI tools as supports, and not that AI is doing everything for them totally for they still own their autonomy. With AI integration, students' textual analysis are empowered with better engagement of the literary text. The students are able to maintain their roles as the foremost analyst of literary meaning as they gainfully use AI tools to engage in analysis of themes and having recognition of the literary patterns. The students skillfully acquire better ways of studying literature with AI integration.

Yan (2023) expressed that in considering human history, development in technology has brought a lot of tremendous changes in production of literature distribution and consumption. In the 15th century the Guternberg printing press was the best and was massive to serve people but today, technology has changed the act of dependence on traditional print to have easy access to dissemination of books and cultural works through technology making reading accessible to the public just at their fingertips. The printing of technology has brought "creative destruction" to the entire European society. The communication mode has changed from traditional printing thereby leading to creation of creators' creative genres and content. The implication of this is that knowledge is increasing more and more throughout the globe. So, digital technology has brought about new forms of literary creation and consumption. People are now able to read and buy books through the internet. Audio books in different fields of study can easily be accessed. AI has the potential and ample opportunity to reshape the literary landscape with the innovation of text books' production methods and new literary forms and genres.

Impact of Integrating AI in Teaching and Learning of Literature

Artificial Intelligence (AI) is rapidly transforming various fields and education is no exception. AI is reshaping the way we learn, teach and manage educational systems. AI technology is being used in classrooms and educational settings from personalized learning experiences to enhancing administrative tasks. The benefits of AI such as how it can provide tailored learning experiences for students, improve efficiency for teachers and support better educational outcomes are of immense development in teaching and learning process. AI is transforming various aspects of education and literature and to understand its full implications, we need to understand the processes and use of machines like: algorithms, natural language processing (NLP) and generative models which play significant roles in literary creations. There are new methodologies to analyze themes, styles and historical contents with the application or integration of AI tools like AI- driven writing assistants. In considering the impact of integrating AI in teaching and learning of literature, one must bear in mind that both the teachers and the students must be digital friendly or literate. This study considers the impact of integrating AI tools in teaching and learning of literature.

According to English hustle (2024) Personalized learning experiences: AI can tailor educational content to the unique needs of each student ensuring they receive support at the right level. Pace enhanced administrative efficiency is another major benefit, AI can automate administrative tasks such as grading, scheduling and managing student records? Freeing up valuable time for teachers to focus more on instruction. AI also improves student

engagement and support to tools like Chabot and virtual assistance can provide students with instant help and answers to their questions making learning more interactive and accessible.

It is important to balance AI integration with the essential human element of teaching to provide some perspective. 'Newton' is an adaptive learning platform that uses AI to provide personalized recommendations and resources to students based on their learning patterns and needs. Another example is 'Grammarly,' which offers AI- powered writing assistance by providing real time feedback on grammar style and clarity, helping students improve their writing skills. Dream Box learning is an aid - driven math education platform that adapts in real time to students' learning needs providing personalized instruction and support. These examples illustrate how AI can enhance various aspects of learning from personalized learning to administrative tasks.

Personalized learning is an educational approach that tailors instruction to meet the individual needs, skills and interests of each student. AI can facilitate personalized learning by adjusting content and feedback based on student performance. Personalized learning allows students to progress at their own pace receiving customized resources and support. Machine learning algorithms can predict a student's future performance by analyzing their past learning data.

Educational technology (edtech) refers to the use of technology to support and enhance teaching and learning, this includes software, hardware and digital tools that improve educational practices and student outcomes. Ed tech tools like virtual classrooms and interactive apps are becoming increasingly common in modern education. English hustle (2024)

Some Innovations and breakthroughs in edtech: AI tutors and Chabot's, AI powered tutors and Chabot's like Carnegie learnings, Maia and duo lingo's aid driven language learning assistant are revolutionizing how students receive personalized support. These tools provide instant feedback and adapt to students' learning styles. Predictive Analytics AI is also being used for predictive analytics to identify students at risk of falling behind platforms like Dream Box learning, use AI to track student progress and predict future performance allowing for timely interventions. English hustle (2024)

Examples of AI impact on learning outcomes, a study by McKenzie and Company found that schools using AI-driven personalized learning platforms saw an average improvement of 30% in students' achievement scores, this shows how tailored educational experiences can significantly enhance learning outcomes. Enhanced engagement research published in the Journal of educational technology indicates that students using AI powered Educational Tools reported higher levels of Engagement and motivation. AI interactive and adaptive features help keep students interested and active in their learning process, these fun facts highlight how AI is not only growing rapidly but also making a significant difference in education from increased Investments to groundbreaking tools and improved learning outcomes. English hustle (2024).

Anelezi (2023) expresses that digital integration tools in tertiary institutions are to bring required change to the educational system to align with technological advancements of the fourth industrial revolution. The transformation is to bring an overwhelming change in methods of teaching, administrative sectors, and cultural context in various institutions of learning. The teachers understanding the use and application of this technology tools for teaching and learning process is of great importance at this crucial time. With the prevalence of the digital education system, every teacher should be able to adapt to the necessary changes in order to bring about the expected changes to improve

educational outcomes and especially to prepare students for future employment. In order for teachers to effectively integrate technology into full teaching practices, teachers' digital competence is highly necessary. Basilotta-Gomez- Pabloz et al (2022) pin -point that in areas of teaching practices many teachers realize that their digital competence is almost nil in critical areas that has to do with assessment and enhancement of practices in education.

Premkumar (2024) conducted a study and discovered that AI has a high transformative impact on literary creation and criticism with opportunities and challenges. More AI tools are integrated into literary production with new ways for producing and refining texts. Distinct characteristics and patterns are associated with limitations of new technology. Critics of literary works have mixed responses to balance in appreciating technical innovation with concerns on authenticity and ethical implications. In addition, the study provides a comprehensive manner through which AI is reshaping the literary landscape, providing insights into the developmental role of technology in Al.

Daghamin & Daghamin (2025) conducted a study on impact of education and literature with integration focusing on the thematic focus of text analysis among 30 postgraduate students of a university. The results of their study revealed the following about integrating AI into teaching and learning of literature.

- AI enhances textual analysis and interpretative practices
- Perseveration of human interpretative authority
- Personalization of literary engagement through AI integration
- Ethical responsibilities and critical understanding in AI integration.

Tira (2021) affirmed that the role of AI in every sector is developing every sector and the education sector is not left out. AI technology has transformed the curriculum of education, field of technology, science, mathematics and engineering and generally, AI is changing the face of education throughout the world. With the implementation of AI technology in education, lecturers, teachers can easily understand their students' needs better and deeper. Also, the students can learn better without encountering any difficulty.

Human beings are believed to be able to learn better, faster to achieve educational goals with AI integration. Currently, many AI-based innovations and breakthroughs are to assist in learning processes for more effectiveness with better practice. Teachers or lecturers should not be gripped with fear of losing their jobs because of AI technologies development but should be ready to embrace it and be able to collaborate with it to integrate it in the teaching learning process of literature to move away from the traditional or conventional method of teaching that makes their lessons boring to students with little or no motivation at all.

Tira (2021) identified that the following AI tools can be applied to different educational technology platforms: virtual mentor, especially for online, voice assistant, and smart content. Virtual mentor is a process through which a more knowledgeable person (the mentor) assists a less- knowing person (the mentee) to achieve a learning objective. Klamma et al. (2020) AI helps to provide feedback on learning activities like asking questions, from students and making recommendations of materials to restudy like a tutor or a teacher. Also Tira quoting Zang (2016) states that Virtual Mentor is a multimedia- integrated e-Learning environment that stresses interaction, personalization, and intelligence. Virtual mentor can be used to teach different genres of literature.

An example of this is, Black board (https://www.blackboard.com/teaching - learning/learning management/mobile-learning-solutions) this application is commonly used in Europe and America

universities by professors, lecturers in publishing notes, tests, assignments and quizzes that permits students to ask questions in relation to assessment process. This application can easily discover reasons for students 'misunderstanding and access the prior programmed solutions that have been released by the lecturer.

Voice Assistant.

Voice assistant integrates AI with the use of cloud computing and enables communication with the users in natural language. Its reliance is on voice function for interaction and communication. It is commonly used in the Edutech platform and it helps students to quickly and practically search for content and materials easily. Examples of voice assistants are Siri (Apple), Google Assistant (Google), Cortana (Microsoft) and others. Just by mentioning or speaking the key words, voice assistants help the students in search of articles, books, materials and reference questions. VA displays the information required or accordingly with the keywords mentioned together to have information inform of texts and images. Without communicating with the teacher, the voice assistant helps to and interact with many different learning materials and this affords the use of this platform at any place or at any time. This creates opportunity for learners to learn independently and not to be confused or get worried or discouraged with the absence of a teacher because the VA is ready with every information they may be in need of.

Personalized Learning. With the help of AI, students can learn personalized learning without the presence of their teacher. They have assistants that render services expected of teachers within the four walls of the classroom. It helps to improve quality learning and studying habits of students effectively. It helps students to study in their own space. AI gathers data from the learner's activities and makes provision for alternative learning solutions as required by the learner's needs. Examples of personalized learning are by Khan Academy. https://www.khanacademy.org/), Duolingohttps://www.duolingo.com/) Ruangguru https://www.ruangguru.com/) and others.

AI is able to provide how the learners' study could be better. With the analysis of student's data from AI, teachers can have an insight to the speed, development and needs of the students and the teachers can know the strength and weakness of the students and have a plan on how to help the students. One must bear in mind that technology can help but cannot totally replace the role of a teacher in relation to humanistic and affection values.

Automatic Assessment

AI makes use of automatic assessment and question purposes online to assess this with the use of Kejarcita platform (https://kejacita.id/). It helps lecturers and teachers in preparation and conduct of tests, quizzes practicable and easy. The teachers no longer need to prepare tests in the manual or conventional method. Teachers only need to choose the type of subject, level, number of questions and others. It is the duty of the teacher to share the link with the students to do it directly online.

All the above mentioned AI tools can be fully integrated in teaching and learning of literature to motivate both teachers and learners for new developments. The teachers are able to develop their teaching methods in literature as much as they are able to integrate AI as the need requires and also, the students are able to create interest in literature learning with the new developments that AI offers them. AI is a good innovation that can also make learning more interesting to students instead of the conventional method that caused students' failure before now. It encourages students' interaction among themselves. It promotes and makes learning of literature to be student centered unlike teacher centered learning. AI integration in learning of literature can help the students to learn before

the teachers' normal class routine teaching or after the classroom teaching. Through AI, the teacher can also monitor the students' progress online.

Challenges of AI in teaching and learning of Literature

AI lacks human emotions and cannot feel, empathize or sympathize to express joyful or sorrowful moods that are significant in literature learning or text analysis which may likely hinder critical thinking from students and may lead to biased or wrong interpretations. The true author of text narratives may not expressly be known or to demarcate between humanly written texts and human written texts. Awofiranye (2024)

Figurative language misinterpretation. AI algorithms may not be able to interpret some literary terms like irony, metaphor and symbolism etc. Since AI does not show emotion, it is not likely to be able to give comparisons of things like human beings that can easily express their emotions in the form of sympathy, empathy, appeal or express human beings feelings at different happenings.

AI lacks originality to truly exhibit the culture of people and the moral values upheld by the people in their different geographical locations, time and settings of texts.

Uneasy accessibility: The geographical location of users and their socio-economic status may bring challenges to access the necessary gadgets to use like smart phones, laptops, and internet connections. The geographical location of the user may have a quality network and even lack of funds to subscribe to the required network.

Inadequate or lack of teachers' preparation: In order to actualize the use of AI, the teachers need adequate preparation to upgrade themselves and move away from the conventional way of teaching literature. The teachers must be well trained by the institutions, the government or the teachers have self-training.

Inability of students attaining full potential. If the use of AI integration is not well managed, students may over rely on the use of AI and not be able to develop their thinking ability and think out of the box. This may not make them do multifaceted tasks. Literature requires deep thinking to analyze, synthesize and appreciate literary texts.

High Cost of Implementation: The cost of implementing AI is very expensive and without funding, assistance may not be possible for teachers and students of literature to make use of such devices.

Addiction to Technological Facilities. Students or teachers of literature may likely tend to be addicted to technological facilities more than necessary. They ignore the use of paper and biro and probably or totally glued to screens consuming their time.

Another major concern is data privacy and security with AI systems collecting and analyzing student data; ensuring that this data is protected from breaches and misuse is crucial.

Equity and access disparities are another concern, not all schools and students have equal access to AI technologies which could widen the gap between different educational institutions and students from varying backgrounds additionally there are concerns about the potential impacts on teacher roles while AI can assist with many tasks there is a fear that it might reduce the need for human teachers or change their roles significantly.

Conclusion

The study concludes that teachers and learners of Literature should embrace the use of AI with the opportunities and restrain from the challenges until there are probable solutions in the nearest future. The transformation is to bring an overwhelming change in methods of teaching, administrative sectors, and cultural context in various institutions of learning. The teachers understanding the use and application of these

technology tools motivates both teachers and learners in the teaching and learning process of literature. It encourages students to personalize learning outside the four walls of the classroom. Every teacher should be able to adapt to the necessary changes in order to bring about the expected changes to improve teaching and learning of literature outcomes and especially to prepare students for better learning outcomes. Also, the teachers should not believe the lie that AI can replace them in teaching of literature since AI cannot give the moral and cultural values that are of immense importance in literature.

Recommendation

Teachers' digital competence is of great importance in order for them to effectively integrate technology in teaching and learning of literature. The lecturers are to attend workshops, seminars and conferences to update themselves. The government and the institutions should provide the teachers and students with the required technological tools. Constant electricity must be put in place by the school authority to make the AI tools usable from time to time. The study recommends that for the development of teaching and learning process, AI should be embraced for every development it offers for assistance. Also, AI should be integrated to the school curriculum for teachers and students to be on the same page

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Artificial Intelligence and Plagiarism: Ethos of Application in English Language Teaching (ELT)

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Abstract

The integration of Artificial Intelligence (AI) into English Language Teaching (ELT) has generated both opportunities and ethical dilemmas, particularly regarding plagiarism and academic integrity. Generative AI tools such as ChatGPT, Bard, and Microsoft Copilot offer students and educators new ways of engaging with language, however, their misuse, including paraphrase-to-plagiarize practices, fabricated references, and evasion of plagiarism detection systems poses serious challenges to the development of authentic language skills and critical thinking. This paper examines the intersection of AI, plagiarism, and ethical application in ELT, highlighting the risks of uncritical adoption and overreliance on these technologies. Drawing on Nigerian and international perspectives, the study argues that sustaining integrity in ELT requires adherence to an "ethos of application," anchored on transparency, accountability, critical engagement, and equity of access. These pillars ensure that AI supports rather than supplants human creativity and linguistic competence while addressing socio-economic disparities in access to digital resources. The paper concludes that embedding AI-ethos principles into educational policies, curricula, and institutional practices is essential to harness AI's potential while safeguarding ethical standards in English language education.

Keywords: Artificial Intelligence, plagiarism, English Language Teaching, academic integrity, ethos of application

Introduction

Language learning is a complex process that involves various cognitive and social dimensions. To support this process, numerous technological tools have been developed, each promising to make learning simpler or more efficient. A particular set of tools that has recently (re) gained popularity among educators and learners are tools based on artificial intelligence (AI). Although AI-based language learning tools have been available for decades, a newer form of AI, known as generative AI (GenAI), has more recently caused educators to sit up and take notice.

The domain of second language (L2), studies (Longoni et al., 2023; Tripathi et al., 2024) revealed that the era of Artificial Intelligence (AI) has seen an increase in cross-language plagiarism. Although AI tools offer unprecedented opportunities such as – generating human-like text interactions, answering questions on general and specific domains and completing other language-related tasks with high accuracy (Floridi & Chiriatti, 2020) which contribute to academic growth, however, according to Sharma & Verma (2020), they also create a new challenge for plagiarism.

Plagiarism is a widespread issue within the academic community, with relics detected in students' assignments, home works, and projects, among others. Academic plagiarism, as rightly puts by Fishman (2009), involves the use of ideas, content, or structures without proper attribution to the source. Learners utilize various strategies for plagiarism, ranging from severe forms like directly copying source material to subtle methods such as partially paraphrasing by altering grammatical structures or replacing words with synonyms, as well as using online paraphrasing services to rephrase texts (Elkhatat, 2022; Meuschke & Gipp, 2013;

Sakamoto & Tsuda, 2019). Thus, plagiarism represents a serious breach of ethical conduct (East, 2010) and is considered one of the most severe forms of research misconduct, endangering the development and evaluation of essential competencies.

Chan (2023)) revealed a growing concern in the academic communities about the use of generative AI (ChatGPT, Co-Pilot, Bard, Bing, perplexity.ai, etc.), which enables students and researchers to cheat and plagiarize written scholarly papers and indulge in other attendant intellectual property issues. Similarly, the desire to get it easily has influenced both researchers and students to over-rely on generative AI tools for academic research papers, completing assignment works, and evading plagiarism detection software (Baidoo-Anu and Ansah, 2023; Akgun and Greenhow, 2022; Rudolph, et al. 2023). Warschauer et al. (2023) added that there are perceived ethical and academic integrity drawbacks to the scholarly community posed by generative AI applications in higher education that have the potential to erode the long-standing tradition of critical thinking, and problem-solving skills.

Literature Review

Generative AI

GenAI, as the name suggests, focuses on generating new content that did not exist before. Whether it is writing text, generating realistic images, composing music, or even creating video content, GenAI can produce output that seems original based on the knowledge gained from analysing extensive data sets. Specifically, when it comes to text-based applications, GenAI uses sophisticated large language models (LLMs) equipped with millions of algorithmic parameters (Macinska & Vinkler, 2024). This enables the production of text that closely mimics human writing styles, based on the linguistic patterns it has learned. A notable example of this technology in action are chatbots (such as OpenAI's ChatGPT, Google Gemini and Microsoft Copilot) which can simulate human conversations.

Language learners can choose from a variety of AI-powered tools that aim to support their language learning process, such as: vocabulary apps, spelling and grammar checks, increasingly sophisticated chatbot technology for conversational practice, and intelligent tutoring systems that claim to offer personalised instruction (Macinska & Vinkler, 2024).

Plagiarism in the Age of AI

Plagiarism, while not a new phenomenon, has assumed a more complex dimension with the advent of AI tools. Traditional plagiarism detection systems such as Turnitin and iThenticate were originally designed to identify similarities between student submissions and pre-existing sources (Sutherland-Smith, 2010). However, with GenAI's ability to generate "original" text that does not exist verbatim in prior sources, these systems face limitations (Zhang & Chen, 2023). This "AI-evasion problem" complicates the ability of instructors to distinguish between genuinely student-produced work and machine-generated output.

Moreover, researchers (Susnjak, 2022; Stojanovski & Bendriss, 2023) highlight that AI-assisted plagiarism extends beyond direct text generation. It includes practices such as:

- **AI-rewording**: using paraphrasing tools that restructure text while maintaining the same meaning.
- **Hybrid authorship**: combining human-written and AI-generated text without acknowledgment.
- **Fabrication**: AI's creation of fictitious references or data (Khalil & Er, 2023).

These developments raise urgent questions for educators and policymakers about how academic honesty and integrity can be preserved in the AI era.

Unethical Use of AI Applications in ELT

Generative AI (GenAI) tools create new avenues for learning support, but they also

enable forms of misconduct that undermine authentic language development and academic integrity—especially in English Language Teaching (ELT) contexts where formative writing and critical thinking are central. Below are the main unethical practices, why they are problematic for L2 learning, and the current evidence base.

1) AI-assisted ghostwriting and contract cheating

Students can outsource substantial portions of writing to chatbots and submit the text as their own. Because GenAI output is novel (not copied from a single source), traditional similarity checkers may return low similarity scores even when the work was not authored by the student Ventayen summarized in Khalil & Er, 2023; Dwivedi et al., 2023). This erodes opportunities to practice idea development, drafting, and revision that are core to ELT pedagogy. UNESCO's guidance flags this risks and urges institutions to redesign assessment and set transparent norms for AI use (UNESCO, 2023).

2) Paraphrase-to-plagiarize and cross-language plagiarism

GenAI makes "semantic plagiarism" easier: learners ask AI to rephrase passages or translate and re-express sources across languages, then submit the result without attribution. Studies in CALL/ELT note that GenAI can help users produce paraphrases that bypass similarity checks, raising integrity concerns for L2 classes that teach paraphrasing as a scholarly skill (Bai & Almukhambetova, 2023; Godwin-Jones, 2023).

3) Fabrication and "hallucinated" sources

A recurring GenAI misuse is citing invented or distorted references (fake DOIs, nonexistent articles). Educators have documented the spread of fabricated sources in student work and recommend explicit instruction in verification and source-checking (Halaweh, 2023; Song, 2024). UNESCO likewise urges institutions to train students to corroborate AI outputs (UNESCO, 2023).

4) Misuse during assessments (take-home and online exams)

Evidence shows GenAI can answer complex prompts, threatening the integrity of remote or text-based assessments (Susnjak, 2022). In ELT courses, that means reading-into-writing tasks, summaries, and essays can be completed by AI with minimal human input. Institutions therefore need assessment designs that foreground process (e.g., in-class drafting/oral defenses) and authentic performance (Susnjak, 2022; Dwivedi et al., 2023).

5) Over-reliance that undermines learning

Unethical dependence on AI (e.g., copy-paste drafting, uncredited revisions) short-circuits the very skills ELT aims to cultivate—idea generation, argumentation, and audience awareness. Writing researchers in L2 contexts warn of diminished critical engagement when AI substitutes rather than supports student thinking (Warschauer et al., 2023).

6) Questionable reliance on AI-detection alone

AI-detection tools remain imperfect. Institutions report both false positives (mislabeling human text as AI) and false negatives (missing AI-generated passages). Turnitin has publicly acknowledged trade-offs in sensitivity (Inside Higher Ed, 2024), and universities have suspended AI-detectors over accuracy and due-process concerns (Vanderbilt University, 2023). ELT programs should avoid high-stakes decisions based solely on detectors and instead combine pedagogical, procedural, and evidentiary approaches *(Inside Higher Ed, 2024; Vanderbilt University, 2023).*

7) Data privacy and ethical policy gaps (with a Nigerian lens)

Where institutional guidance is absent, learners may feed personal or institutional data into third-party tools without consent frameworks.

A UNESCO global survey found fewer than 10% of institutions had GenAI policies by early 2024 (World Economic Forum, 2024). Nigeria's National Universities Commission (NUC) updated e-learning guidelines to require "plagiarism and AI-assisted detection tools" and proctoring in learning platforms, but sector-wide AI governance remains uneven (NUC, 2024; Onwuchekwa & Akinwale, 2024). Some Nigerian universities (e.g., NOUN) have begun issuing AI policies that emphasize responsible use, transparency, and privacy (NOUN, 2025).

The Ethos of AI Application in English Language Teaching (ELT)

As Artificial Intelligence (AI) increasingly saturates educational practices, the concept of an "ethos of application" gains prominence. In ELT, this ethos indicates a set of moral guiding how AI tools are integrated into teaching, learning, and assessment. This paper unpacks four fundamental pillars—transparency, accountability, critical engagement, and equity of access how these pillars are crucial for maintaining academic integrity, promoting fairness, and preserving the developmental goals of English language learning.

Transparency

Transparency involves the open disclosure of AI's role in generating content, be it teaching materials, written submissions, or assessments. In ELT, where authenticity and authorship matter, transparency ensures that the use of AI does not erode trust between stakeholders. In a study by Izevbigie and colleagues (2025), they assessed the ethical considerations surrounding generative AI (e.g., ChatGPT) in higher education. They found that students' awareness of AI-related ethical challenges was the strongest predictor of responsible AI use and thus establishing the need for explicit transparency guidelines in institutional policies (Izevbigie et al., 2025). Institutions must therefore require declarations when AI tools are used in generating essays, lesson materials, or feedback.

Furthermore, Nigeria's draft National AI Strategy outlines trust, transparency, and accountability as foundational pillars in ethical AI development (Olukoju, as cited in Guardian Nigeria, 28 August, 2025). By incorporating transparency into policy design, universities and schools can clarify expectations—for instance, through assignment instructions that require disclosures of AI assistance.

Without such transparency, students may misrepresent AI-generated work as their own, undermining ELT's emphasis on language competence, critical writing, and independent thought.

Accountability

Accountability ensures that all stakeholders—students, educators, and institutions—understand responsibilities and boundaries in AI usage. A report in *The Guardian Nigeria* quotes academics pressing for AI governance; they advocate a cross-disciplinary approach, involving ethics, pedagogy, technology, and policy experts, to devise guidelines that regulate AI use (Guardian, 28th August, 2025). These academic voices reinforce the necessity for structured accountability mechanisms. Obafemi Awolowo University, Lagos State University, and other institutions are already initiating AI-related policies or pilot programs (Guardian, 28th August, 2025), indicating a grassroots move across the sector.

Accountability therefore involves proactive policy development: universities must define acceptable AI practices (e.g., using AI as preparatory tools but not for final submission), specify consequences for misuse, and establish processes for review—either via academic committees or digital forensics. This safeguards academic standards and helps maintain confidence in ELT outputs.

Critical Engagement

Critical engagement involves fostering

users' capacity to analyze, verify, and contextualize AI outputs rather than accept them uncritically—a core competency in ELT where meaning, and appropriateness are central. Yusuf et al. (2024) highlight the socio-cultural complexities shaping GenAI adoption in Nigerian higher education. They argue that successful integration depends on aligning AI tools with local educational values and contexts. In the same vein, Boateng (2024) presents AI applications such as Kwame, a bilingual AI teaching assistant, and SuaCode, an app for learning coding. He stresses the need to adapt AI tools for Africa's linguistic and contextual diversity rather than recycling Western solutions (Boateng, 2024).

Critical engagement therefore means encouraging ELT educators and learners to question AI suggestions, cross-check sources, and tailor AI-generated content to align with local linguistic and cultural realities. Pedagogically, this could involve classroom discussions where students critique AI-generated essays or role-play instructor–AI dialogues to internalize criteria for quality language use.

Equity of Access

Equity of access ensures that the benefits of AI-enhanced ELT are available to all students across socio-economic, geographic, and institutional divides rather than reinforcing existing inequalities.

As Adegbite (2023) observes in *The Guardian Nigeria*, Nigeria faces a daunting learning crisis: overcrowded classrooms, poor infrastructure, and a high proportion of out-of-school children. AI-powered tools (e.g., Ulesson) offer localized, adaptive tutoring aligned with national curricula, highlighting AI's potential to close educational gaps provided access is equitable (Adegbite, 2023). However, infrastructure remains a key impediment. An investigation into AI-based tools in higher education indicates that unstable electricity, inadequate hardware, and budget constraints hamper implementation (Adigun & Okebukola, 2023; Olaniyan & Okafor, 2022; Chigbundu & Oluwabiyi, 2023), while data privacy frameworks remain weak (Temitope, 2024). These structural barriers mean students in rural or under-resourced areas are left behind.

Projects like the AI for Education Equity Project (AIEEP) aim to address such inequities by developing context-sensitive, adaptive AI tools for underserved Nigerian communities (Pristine SACC Initiative, 2025). Similarly, the Universal Service Provision Fund (USPF) works to extend ICT access to rural areas, promoting social inclusion in education (USPF, 2025).

Nonprofits such as W.TEC (Women's Technology Empowerment Centre) and Tech Herfrica provide digital literacy and empowerment programs for girls and women, particularly in rural communities (W.TEC, 2025; Tech Herfrica, 2025). These organizations exemplify how grassroots interventions can bridge the digital gap and promote supportive environments for AI-enhanced learning.

Equity of access also implies affordability: students should not be priced out of AI tools. Here, public–private partnerships, subsidized devices, and offline-compatible AI platforms (e.g., AI-enhanced content via SMS or preloaded apps) can help democratize access.

Conclusion

As AI transforms the ELT landscape, the ethos of its application must anchor the process to ethical and developmental values. Transparency ensures clarity about AI's role in learning and authorship. Accountability establishes shared responsibilities and policy safeguards. Critical engagement nurtures analytical skills, language sensemaking, and contextual adaptability. Equity of access ensures that AI's benefits reach across Nigeria's diverse educational terrain without reinforcing existing divides.

In view of the above, ELT stakeholders from federal ministries and university administrators

to classroom teachers and students must collaborate to embed these four pillars into policy, training, curriculum design, and infrastructure planning. For example, at the national level, Nigeria's draft AI Strategy mandates ethical principles including transparency, fairness, and accountability (Guardian, 20th, 2025). At the institutional level, universities can require AI disclosure statements, run AI-literacy workshops, and integrate AI critique into coursework. Educational NGOs can provide offline AI tools and training to marginalized communities. Educational technologists can develop localized AI platforms (e.g., in local languages and curricula) that respect cultural diversity.

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Teacher Lesson Delivery in English Essay Writing in Egbeda Local Government Area, Oyo State

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Abstract

The study investigated teacher lesson delivery in English essay writing in Egbeda Local Government Area. The survey research design was adopted. The participants were 10 English Language teachers drawn randomly from 10 secondary schools in Egbeda Local Government Area. The instrument used was Teachers' Observation Scale on Lesson Delivery in Essay Writing (r=.84). Data collected were analysed using descriptive statistics. Findings revealed that majority of the English Language teachers selected were not good in lesson delivery especially in English essay writing. Based on the finding, it is recommended that English Language teachers should be exposed to self-development schemes that could improve their classroom practice in terms of lesson delivery.

Keywords: Lesson Delivery, Grammatical Competence, Essay Writing and Attitude

Introduction

The teaching and learning of English Language includes four basic interrelated skills which are listening, speaking, reading, and writing. These skills are all essential for a person to be proficient in English Language as they allow meaningful communication to be effectively conveyed. However, of the four language skills, writing is probably the most difficult because it requires the application of knowledge of the other three skills. Writing is foundational to success in academics, in the work place and in the global economy. In an increasingly demanding world of literacy, the importance of ensuring students' proficiency in writing can never be overemphasised. The ability to write well, hitherto a luxury is now a dire necessity (Gallagher, 2006). Writing is vital to students' developing literacy skills. In light of this, teaching learners to write well should be top priority of a worthwhile education system. Gallagher (2006) observed that a school that teaches its children the curriculum without concurrently teaching them how to write well is a school that has failed.

Writing requires composing, which means the power either to inform pieces of data within the sort of narratives, or transform information into new texts, as in expository or argumentative writing. Writing is of great importance for learning to happen. Without writing, language learning remains incomplete (Elizabeth, 2014). Writing is fundamental to effective communication. Individuals need writing skill in their day- to- day activities. As individuals mature and become working adults, competence in writing continues to be essential (Fakeye and Ogunyemi, 2010). Essay writing is a way of testing students' competence in writing. However, writing skill is not limited only to essay writing; it is needed in other aspects of English examination like comprehension and summary writing. If students cannot write effectively, they might not be ready to put answers across effectively in comprehension, they might not be ready to write correct sentences in summary writing and they might not even be ready to take down lecture notes in school. As one of the major aspects of the English Language, writing is tested at examinations such as West Africa Senior School Certificate Examination (WASSCE) and National Examination Council (NECO) SSCE within the sort of essay writing and letter writing.

Studies have shown that writing is related to students' ability to succeed in various academic subjects (Fakeye 2002; Ogunyemi

2014; Igubor 2015). Essay writing involves such practices as garnering content materials for the essay; organising the materials into logical order (paragraphing); using appropriate expression in terms of appropriate vocabulary and sentence construction and mechanics: punctuation, capitalisation, spelling and grammar. Essay writing, therefore, requires conscious efforts and practice in composing, developing and analysing ideas. Compared with students writing in their native language (L1), students writing in second language (L2) have to also acquire proficiency in the use of language as well as writing strategies, techniques and skills. Candidates who are ready to write good essays in English perform better in other aspects of the topic like comprehension and summary while those that are unable to write good essays in English perform poorly within the subject (Fakeye 2002; Igubor 2015).

A cursory look at the West African Examinations Council (WAEC) syllabus 2022-2024 revealed that marks are distributed along different aspects of English Language as follows: Essay/letter writing carries 50 marks; Comprehension carries 20 marks, while Summary carries 30 marks giving the total of 100marks. It is often deduced from this analysis that although essay and letter writing carries 50 marks which is 45% of the entire marks obtainable in English paper one, the skill of writing is additionally required within the other two aspects (comprehension and summary). Therefore, by implication, a student that lacks good writing skills will not perform well altogether the three sections of paper one which suggests that such a student's chance of passing the examination will be very low. Poor writing skills are identified as a serious explanation for mass failure of Nigerian candidates in English examinations.

Several reasons have been given as causes of the poor performance of students in essay writing. However, as Ahmad (2008) notes, success in teaching in the classroom lies in teachers' hands because they are responsible for stimulating students' interest and in directing the mood and flow of the class. Thus, a major cause of students' underachievement in essay writing is that of teacher lesson delivery. There is no gain saying that any curriculum without the back up of human resource would fail to produce the desired educational outcomes. In other words, adequate human resource must be provided in order for the curricular objectives to be translated into meaningful results. It is the desire of any good teacher to achieve his instructional objectives through effective lesson planning and delivery. Effective teaching, however, can only be achieved when a teacher is able to integrate proper lesson planning into his lesson delivery. The search for efficient and effective delivery of instruction to students has always been major concern of educators.

Lesson delivery is of great importance in the realm of teaching and learning. Lesson delivery is an encompassing term which entails lesson planning, lesson presentation, class management and evaluation. The CEDA (Centre for Educational Development Assessment) Meta-Profession Project (2014) defined lesson delivery as those human interactive skills that facilitate learning in face-to-face instruction, as well as those skills in using various forms of instructional delivery mechanisms. To live up to expectation, the teacher needs to be competent in his area with adequate professional training and make effective use of these to promote effectiveness and efficiency in his lesson delivery.

Effective teaching stimulates and inspires the learners into attaining the desired instructional objectives, maintaining positive attitude and using the knowledge and skills gained in solving problems in new situations (Owuamanam, 2018). Therefore, teaching effectively demands that the teacher must possess some basic qualities like adequate knowledge of subject matter, abilities to set and pursue desirable instructional objectives, competency in lesson preparation, presentation and evaluation. For a meaningful and

successful delivery of a teacher's lesson, he or she needs adequate knowledge and application of educational technology.

An aspect of educational technology is the presentation of the lesson. This is the way and manner in which the teacher presents new materials which he thinks will result in the expected changes in students' behaviour called learning. The teacher presents the materials he or she has for the class in an orderly manner, step-by-step and from simple to the complex. Starting from the introduction of the lesson, the teacher should introduce varieties of activities to arouse students' interest. Bearing in mind that students learn more when they are actively involved and that teaching is not a one-way affair in which the teacher alone talks while the students passively sit and listen. The teacher must make use of questions as a teaching technique. He or she must ask questions that will stimulate students and make them think. The teacher's ability to raise thought-provoking questions is the key to successful lesson delivery (Onwuka, 2015).

Previous studies (Allami and Naeimi, 2011; Abdulrahman, 2012; and Ogunyemi and Adebowale 2018) focused largely on interventions to improve English essay writing performance of students, with little research attention paid to assessment of teacher lesson deliveryin English essay writing in Egbeda Local Government Area, Oyo State. Hence, this study became imperative.

Statement of the Problem

Essay writing is an essential aspect in English Language as students' good performance in it is compulsory for admission into higher institution of learning in Nigeria. However, research has shown that students' performance is poor in English Language especially in essay writing. As a way of addressing the problem, researchers have carried out studies on vocabulary knowledge and self-efficacy, peer assessment of essay writing and intervention studies, but much research attention has not been directed towards teacher lesson delivery. Therefore, this study examined teacher lesson delivery in English essay writing in selected senior secondary schools in Egbeda Local Government Area of Oyo State.

Objective of the Study

The objective of the study was to investigate teacher lesson delivery in English essay writing in Egbeda Local Government Area.

Research Questions

One research question was answered in this study.

1. What is the rating of English Language teacher lesson delivery in essay writing?

Scope of the Study

The study explored teachers' lesson delivery in English essay writing in Egbeda Local Government Area, Oyo State. It covered senior secondary school II English Language teachers in 10 public senior secondary schools II in Egbeda Local Government Area, Oyo State.

Methodology

The study adopted the survey research design. The population of this study comprised all English Language teachers in Egbeda Local Government Area of Oyo State. There are 165 public secondary schools in the Ibadan Metropolis. From the total number of 26 public secondary schools that are in Egbeda Local Government Area, the simple random sampling technique was used to select 10 senior secondary schools. The instrument used for data collection was Teacher Observation Scale on Lesson Delivery in Essay Writing (r=0.81). The study was conducted by observing the 10 teachers' lesson delivery in Essay writing in their schools Each teacher was observed twice.

Results

Table 1: English Language teacher lesson delivery in essay writing

S/N	STATEMENTS	Very Good	Good	Fair	Poor		S.D
1.	The teacher clearly writes and reviews the lesson objectives to the students	1 (5%)	-	3 (15%)	16 (80%)	1.30	.732
2.	The teacher activates students' prior knowledge effectively	-	1 (5%)	8 (40%)	11 (55%)	1.50	.606
3.	The teacher communicates accurate relevant content to the students	1 (5%)	1 (5%)	11 (55%)	7 (35%)	1.80	.767
4.	The teacher supports the lesson with adequate and suitable examples	-	3 (15%)	13 (65%)	4 (20%)	1.95	.604
5.	The teacher uses strategies that are appropriate for the lesson objectives	1 (5%)	4 (20%)	7 (35%)	8 (40%)	1.90	.911
6.	The teacher supports the lesson with adequate and suitable instructional materials	-	4 (20%)	10 (50%)	6 (30%)	1.90	.718
7.	The teacher engages students in suitable learning activities	-	5 (25%)	8 (40%)	7 (35%)	1.90	.788
8.	The teacher moves around the classroom constantly during the lesson to assess mastery and provide individual help	1 (5%)	3 (15%)	10 (50%)	6 (30%)	1.95	.825
9.	The teachers' pacing and use of time are accurate	1 (5%)	5 (25%)	10 (50%)	4 (20%)	2.15	.812
10.	The teacher organises the classroom well in order to allow for planned teacher-to-student and student-to-student interactions	1 (5%)	6 (30%)	8 (40%)	5 (25%)	2.15	.875
11.	The teacher reinforces positive behavior and corrects disruptive behaviors	-	7 (35%)	11 (55%)	2 (10%)	2.25	.638
12.	The teacher adequately assesses students' mastery of the objectives at the end of the lesson	1 (5%)	5 (25%)	9 (45%)	5 (25%)	2.10	.852
		Standard Mean = 2.50;		**Weighted Mean=1.90**			

Table 1 shows the lesson delivery of English Language teachers in teaching essay writing. The result indicates a weighted mean of 1.90 which is lower than the threshold set at 2.50. This implies that the selected English Language teachers were rated low in lesson delivery of English essay writing. The result has shown that majority of the teachers selected were not good in lesson delivery especially in English essay writing.

Discussion of Findings

English Language Teacher Lesson Delivery in Essay Writing

The study found that English Language teacher lesson delivery in essay writing was rated low because the weighted mean is lower than the average. The result has shown that majority of the teachers selected were not good in lesson delivery especially in English essay writing. The reason for this could be because of poor lesson delivery or poor quality of raters (inexperienced raters) and time factor. The finding of this study is against the view of Shittu (2018) who found that teacher lesson preparation and delivery were good. In lesson delivery, teachers communicated with learners in simple English Language expressions. They were mobile while lessons progressed. They modulated their voices appropriately during lessons delivery but did not reinforce students' efforts appropriately nor used sufficient examples to illustrate concepts during instruction.

Conclusion

Based on the findings of this study, it can be concluded that teacher lesson delivery

and student grammatical competence are key to improving students' learning outcomes (achievement and attitude) in essay writing. Since the independent variables (teacher lesson delivery and student grammatical competence) could determine learning outcomes in essay writing, it is concluded that these variables should be focused when trying to look for causes that are related to persistent poor learning outcomes in essay writing.

Recommendations

Based on the findings of this study, it is recommended that:

1. English Language teachers should be exposed to self-development schemes that could improve their classroom practice in terms of lesson preparation and delivery.
2. Regular workshops, conferences, seminars and in-service training organised by government, faculties of education, and relevant professional bodies in education should be organised for teachers to update them on innovative teaching methods in essay writing and improve their lesson delivery.

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Assessing the Effectiveness of AI – Powered Chatbots in Enhancing the Indigenous Language Learning in Ogbomoso North Secondary Schools, Oyo State, Nigeria

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Abstract

This study explores the effectiveness of AI – powered chatbots in enhancing Yoruba language learning among secondary school students in Ogbomoso North, Oyo State, Nigeria. Two secondary schools were purposively selected. The justification for the purposive selection was in order to identify schools having regular electricity and functioning computer systems for effective instruction through chatbots instructional technology. 100 students were randomly selected from the two schools, and assigned to experimental group (n = 55), and a control group (n = 45). A quasi-experimental design was employed, while the experimental group received AI – powered chatbots – based language instruction, the control group received conventional method of instruction. The school term was very tight during the period of the research, hence active intervention took 6 weeks while 2 weeks were used for the tests; making a duration of 8 weeks. The instrument used for the study was the achievement test; and questions were administered to both groups. The pre – test and post – test assessment were conducted to evaluate language proficiency. The outcomes of the achievement tests were used for data collection. Ancova, t – test and paired sample t – test were used for data analysis. Findings showed that there was no significant difference in the learning outcomes of the two groups prior to the treatment. However, there was a significant difference in the performance of the two groups after treatment; with AI – powered chatbots producing better results than the conventional method of instruction. The result suggests that AI – powered chatbots are effective in enhancing indigenous language learning among secondary school students in Ogbomoso North, Oyo state, Nigeria. This study recommends integrating AI – powered chatbots into Yoruba language instruction to promote cultural preservation and language revitalization. The results equally highlights the potential of technology – enhanced learning to support indigenous language preservation and promotion.

Keywords: Assessment, AI – Powered Chatbots, Indigenous language learning, Effectiveness, Ogbomoso North Secondary Schools.

Introduction

The use of indigenous languages is declining especially among the school aged children, who prefer the English language over their indigenous languages. Despite the fact that Nigeria is blessed with over 500 languages, with the Yoruba language being one of the widely spoken languages in Oyo state, the declining trend of using the indigenous language for various instruction and communication is becoming worrisome. This decline advances a risk of language loss and cultural heritage erosion. It is therefore very important for all responsible stakeholders in language education to pay particular attention to innovative instructional strategies which can be leveraged to enhance indigenous language learning in secondary schools specifically (Slocum, 2021; Rosenshine, 2012; & Darling – Hammed et.al; 2022).

Assessing instructional effectiveness in education is one major area of educational research that should not be ignored. This involves teachers' understanding of the content of learning, the knowledge involved, skills to be employed, and strategies that significantly buttress students' learning by meeting diverse needs through evidence – based, collaborating, engaging and flexible instructional process. Also, it refers to adopting various approaches

suitable for students' backgrounds and continuous reflection on positive improved learning outcomes (Bill & Melinda; 2021; DePaul, 2025; & Asak; 2025).

AI – chatbots are learning machines which have been trained using techniques such as supervised and unsupervised learning, engaging entity extraction, and involving a kind of contextual response design in order to provide personalized learning, fast contextual understanding, and relevant and comprehensive educational assistance to the learners and users (Wollny, 2025; Sahu & Kumar, 2023; Smythes, 2025; LearnWise, 2025).

AI – powered chatbots instructional technology have shown great potential generally in language learning. It gives interactive personalized, and accessible learning experience. Chatbots instructional technology provides personalized learning that involves instructional content to individual students' abilities, knowledge, needs and learning styles. It also gives real time feedback that enable students assess their progress, identify areas of improvement, and access immediate and regular feedback. AI – powered chatbots involves engaging students by incorporating quizzes, gamification, and challenges that improves learners' motivation and sustain their interest towards learning. (Okonwo & Ade – Ibijola, 2021; Aremu, 2024; World Bank, 2025).

Moreover, AI – tools like chatbots provide access to reaching underserved rural areas which in most cases have inadequate qualified language teachers and language teaching tools. It was evidenced by previous researchers that the AI – chatbots instructional technology proves adequate in handling linguistic nuances like total distinctions and adapt to diverse proficiency levels for essential features for indigenous language earning for such reasons, chatbots technology have emerged as promising tools in language education in place of the limited resources in traditional pedagogies with regular insufficient teaching kits, chatbots technology offers new hope to effective teaching of indigenous languages especially the Yoruba language teaching in Ogbomoso North, Oyo state; in order to prevent the risk of cultural loss (Cauley & Mc Millan, 2020; Mohammed & Alian, 2023).

Enhancing teaching with chatbots in indigenous language learning engage teachers to focus more on pedagogy. It enhances learning by focusing on formative assessments and data – driven instruction offering students quick feedback and personalized learning experiences (Englie, 2024; Belda – Medina et.al, 2022).

AI – chatbots instructional technology can be tailored to support indigenous language learning by providing conversational practice, vocabulary training, and cultural context, focusing on interactive language acquisition in places where human and material resources and mostly insufficient or not available. With little research outcomes on chatbots technology for teaching Yoruba language, it is evident that chatbots tools have adaptable principles for effective language learning in secondary schools. Besides, recent evidence from Nigerian educational settings reveals that chatbots – driven tutoring systems significantly supports learning outcomes, improves language skills, and digital literacy as well. However, the core of this study is based on assessing the effectiveness of chatbots instruction on Yoruba language within secondary schools in Ogbomoso North and how it could improve indigenous language use and foster cultural continuity, in order to prevent cultural loss (Labadze, Grigolia & Machaidze, 2023).

Indigenous language learning in education is crucial and must be considered with seriousness among stakeholders in education and specifically language education. It empowers the indigenous communities to take control of their language and cultural education. Indigenous language learning in education preserves the cultural heritage and identity of indigenous communities,

revitalizing endangered languages and promoting their use among younger generations (Okonwo & Ade – Ibijola, 2021; Mohamed & Alian, 2023). Challenges and limitations of using AI – powered chatbots in enhancing the teaching of indigenous languages, specifically Yoruba language, are not far – fetched. There is the barrier of dialect diversity existing in indigenous languages; while chatbots are trained only on one variant. This may fail or confuse learners and deprive effective use of chatbots in such regions. The challenges of tone, intonation, and non – verbal cues is also crucial in many African languages like Yoruba language. For instance, the chatbots tools cannot capture pronunciation or tone accuracy. Other challenges like technology infrastructure gaps, teacher readiness, cultural mismatch and assessment limitation are also part of the barriers confronting the use of chatbots for effective teaching of the indigenous language in Ogbomoso North secondary schools.

Assessing and enhancing the effectiveness of indigenous language learning especially the Yoruba language can enhance cultural identity, strengthening indigenous students' connection to their culture and communities. Prioritizing indigenous language learning in education will assist to promote linguistic diversity, cultural preservation, and community empowerment; while providing training and support for indigenous language teachers and leveraging technology in language learning and instructional process; such as language learning application and online resources, to support indigenous language learning (Kwon, Shin, & Lee, 2023; Labadze, 2023; Kohnke, Moorhouse & Zou, 2023).

Therefore, this study is concerned with assessing how effective AI – powered chatbots are in enhancing indigenous language learning in this specific local context, while addressing both pedagogical impact and practical implementation considerations ((Kwon, Shin, & Lee, 2023; Labadze, 2023; Kohnke, Moorhouse & Zou, 2023).

Theoretical Framework

The study has strong beliefs in several interrelated learning theories rooted from constructivism technology ideas of learning.

(i) Fred's Technology Acceptance Model (TAM)

Fred D. Davis (1989) introduced TAM in his dissertation and it was later published in 1989. A central component crucial to Fred's view of TAM concerns the fact that people's intention to use technology in learning depends on two basic beliefs:

(a) Perceived Usefulness (PU): Will it enhance teaching, learning, and improve students' performance?

(b) Perceived Ease of Use (PEOU): Will it be accessible and easy for students' and teachers' use?

By extension, other versions of TAM were introduced, with the addition of social influence, experience, and cognitive factors. TAM explores into utility and ease of use in general technology adoption. The usual question existing in the use of AI – powered chatbots in enhancing the teaching of indigenous language makes it relevant to this study. "What benefit and is it simple to use? This explains one of the barriers and challenges of using AI – powered chatbots technology in teaching Yoruba language in Ogbomoso North secondary schools, Oyo state.

(ii) Constructivist Technology Acceptance Model (c – TAM)

Venkatesh and Davis's (2000) Constructivist Technology Acceptance Model was introduced as an extension merging TAM with constructivist learning theory. It was an extension that incorporates Constructivist Engagement (CE) to TAM's PU and PEOU. This learning theory emphasizes that learners accept technology when it supports active knowledge construction, not just utility or ease of use. It concerns majorly the degree

to which the technology enables learners to build knowledge through interaction with technology tools, like chatbots. It also deals with contextual factors like learning tasks, feedback, and learners' collaboration. c - TAM is concerned with utility, ease of use, and learner – centered knowledge construction. This is relevant to this study as it shows the aspects of learners' interest in using chatbots tools for learning the indigenous language, if learners find their interactions useful for constructing Yoruba knowledge, and whether AI – powered chatbots strategy is adoptable for enhancing the teaching of Yorba language. On this study, both TAM and c – TAM give a robust interaction and knowledge on assessing the effectiveness of chatbots AI – powered instructional strategy and also predicts the level of awareness and adoption in the research location.

Statement of the Problem

The declining trend of indigenous language use among secondary school students in Ogbomoso North threatens cultural identity, language survival, and cultural loss. The conventional teaching approaches face challenges like lack of resources, and qualified teachers. More so, there is limited empirical evidence assessing the effectiveness of AI – powered chatbots instructional technology specifically in Nigerian secondary schools contexts, particularly for indigenous language in Ogbomoso North, Oyo state. Although AI – powered chatbots have shown some enlightenments in improving endangered languages by offering personalized, interactive earning support, yet not specifically in Yoruba indigenous language. This current research addresses such gap by assessing how effective AI – powered chatbots can impact indigenous Yoruba language learning and students' engagement in using AI – powered chatbots instruction in Ogbomoso North secondary school, Oyo state.

Objective of the study

The objectives of the study are to:

1. Assess the impact of AI – powered chatbots on indigenous language learning outcomes in Ogbomoso North secondary schools.
2. Identify challenges and limitations of using AI – powered chatbots in indigenous language learning.
3. Explore the potential future developments for AI – powered chatbots in indigenous language learning.
4. Identify key features of AI – chatbots that support effective indigenous language learning in the study area.

Hypotheses

1. There is no significant difference in indigenous language vocabulary acquisition between students taught using AI – powered chatbots and those taught using conventional method.
2. There is no significant difference in students' engagement in indigenous language learning between students taught with AI – powered chatbots and those taught with conventional method.
3. There is no significant difference in self – confidence in using indigenous language between students who use AI – powered chatbots and those who are taught with conventional method.
4. There is no significant difference in indigenous language speaking proficiency between students exposed to AI – powered chatbots and those receiving conventional method of instruction.

Methodology

This study employs the quasi – experimental design, specifically a pretest – posttest control group design, to assess the effectiveness of AI – powered chatbots in enhancing indigenous language learning among secondary schools students in Ogbomoso North, Oyo state. Students in the experimental group used AI – powered

chatbots for Yoruba language learning, while the control group received the learning through traditional instruction. The researcher ensured regular electricity and that the chatbots are technically stable and accessible to the participants of the study. The researcher provides teachers with relevant training on using chatbots and integrating it into their teaching practices.

All secondary school students in Ogbomoso North represent the population of the study. A sample size of 100 students were randomly selected from two secondary schools which were purposively selected for stable electricity supply and schools where chatbots are technically stable and accessible to all the participants for the experimental group while the control group used the conventional instruction. Data were collected through the outcomes of pretest and posttest to assess students' language proficiency before and after the intervention. Relevant language proficiency tests were used to assess students' language skills. Data was analyzed using descriptive statistics to describe the data collected, while inferential statistics was used to compare the performance of the experimental and control groups. All secondary school students in Ogbomoso North represent the population of the study. A sample size of 100 students were randomly selected in Ogbomoso North secondary schools, Oyo state.

Presentation of Results

Hypothesis One: There is no significant difference in indigenous language vocabulary acquisition between students taught using AI – powered chatbots and those taught using conventional method.

Table 1: t – test analysis of test scores of students taught with AI – powered chatbots and those taught with conventional method.

Variable	N	$\ddot{\bar{x}}$	S.D	D.f	t – cal	Sig.	Decision at $p < .05$
AI – powered chatbots	55	9.84	4.2	98	0.79	.326	NS
Conventional method	45	9.10	5.1				

The analysis in Table 1 shows that, there is no significant difference between the pretest scores of the students taught with AI – powered chatbots and those taught with conventional method $(t_{(98)} = 0.79, p = .326)$. Hence, any significant difference in the posttest scores may be attributed to the treatment given to the experimental group.

Hypothesis Two: There is no significant difference in students' engagement in indigenous language learning between students taught with AI – powered chatbots and those taught with conventional method.

Table 2: t – test analysis of students' engagement in indigenous language vocabulary of students taught using AI – powered chatbots and those using conventional methods.

Variable	N	$\ddot{\bar{x}}$	S.D	D.f	t – cal	Sig.	Decision at $p < .05$
AI – powered chatbots	55	21.28	5.8	98	5.98	.000	*
Conventional method	45	14.16	6.1				

$* =$ **significant at $p < .05$ alpha level**

The analysis of Table 2 indicates that, there is significant difference between students' engagement in indigenous language learning taught with AI – powered chatbots and those

taught using conventional method $(t_{(98)} = 5.98^{*}, p = .000)$, in favour of students taught using AI – powered chatbots. Hence, the hypothesis is rejected.

Hypothesis Three: There is no significant difference in self – confidence in using indigenous language between students who use AI – powered chatbots and those who were taught with conventional method.

Table 3: t – test analysis of students' self – confidence in using indigenous language with AI – powered chatbots and those with conventional method

Variable	N	ẍ	S.D	D.f	t – cal	Sig.	Decision at $p < .05$
AI – powered chatbots	55	20.94	5.4	98	6.16	.000	*
Conventional method	45	14.16	5.6				

$* =$ **significant at $p < .05$ alpha level**

The analysis of table 3 shows that, there is significant difference in self – confidence in using indigenous language between students who use AI – powered chatbots and those who use conventional method $(t_{(98)} = 6.16^{*}, p = .000)$, in favour of students who use AI – powered chatbots, the hypothesis is rejected.

Hypothesis Four: There is no significant difference in indigenous language speaking proficiency between students exposed to AI – powered chatbots and those receiving conventional method of instruction.

Table 4: t – test analysis of indigenous language speaking proficiency between students exposed to AI – powered chatbots and those receiving conventional instruction.

Variable	N	ẍ	S.D	D.f	t – cal	Sig.	Decision at $p < .05$
AI – powered chatbots	55	14.69	5.1	98	5.42	.000	*
Conventional method	45	20.43	5.5				

$* =$ **significant at $p < .05$ alpha level**

The analysis of table 4 shows that, there is significant difference in indigenous language speaking proficiency between students exposed to AI – powered chatbots and those receiving conventional instruction $(t_{(98)} = 5.42^{*}, p = .000)$, in favour of those exposed to conventional instruction. Hence, the hypothesis is rejected.

Discussion of Findings

This research investigated the effectiveness of AI - powered chatbots in enhancing the indigenous language learning in Ogbomoso North secondary schools, Oyo state, Nigeria. The first hypothesis found that there was no significant difference between students taught with AI – powered chatbots and those taught with conventional method in Ogbomoso North secondary schools. This agrees with (Asak and Asak 2025) who investigated the potentials of artificial intelligence in language learning and modern pedagogy among secondary school students. The researchers' findings indicated that artificial intelligence enhances language learning in secondary schools and that the conventional method serves as a strong background to the technology – based instructional approaches (Okonwo and Ade – Ibijola (2021) investigated AI – chatbots for

supporting minority language learning: Potential and challenges. The researchers concluded that AI – chatbots instruction have significant effect on indigenous language learning, most especially conversational practice and vocabulary building in indigenous languages. The findings of these various researcher agree with the current findings that AI – powered chatbots instruction enhances indigenous language learning in vocabulary acquisition in secondary schools.

There was significant difference between students' engagement in indigenous language learning in Ogbomoso North secondary schools. The students who received AI – powered chatbot instruction were more engaged in the learning activities that those who received conventional method of instruction. The result agrees with Belda – Medina and Calve – Ferrer (2022), Englie (2024) and Slocum (2021) who found that students' engagement and cooperation in language learning is higher in chatbots instruction than when students are taught with the conventional method. Kwon, Shin and Lee (2023) concluded in their study that application of chatbots instruction for writing and practice in indigenous language learning enhance student's engagement in language learning and vocabulary practice. This indicates that chatbots, as tools in artificial intelligence have the potential to transform education and indigenous language learning, by enhancing students engagement in language learning, vocabulary development and personalized learning experiences.

More so, the study revealed that there is significant difference in self – confidence when using indigenous language with chatbots instruction. Kohnke, Morehous and Zou (2023) reported that using technology – based for indigenous language learning enhances students understanding and language acquisition. In their study: ChatGPT for language learning and teaching; it was concluded that personalized learning enhances student's learning outcomes in indigenous language learning in secondary schools.

On a final note, the study showed that there is significant difference in indigenous language speaking proficiency in favour of those engaged with the conventional instruction. This indicated that indigenous language learners who have been exposed to their local languages through conventional instruction, speak the language proficiently than those exposed to AI – powered chatbots instruction. This explains the assertions of Sahu and Kumar (2023) and Aremu (2024) that the potentials of artificial intelligence in enhancing indigenous language speaking proficiency is significantly lower compared with its impact on indigenous language acquisition. Buttressing the findings of this study, AI – chatbots provides fluent reading, writing and improves the already acquired speaking skill in the indigenous language especially Yoruba, based on the research area. It also creates increased accessibility to quality language learning resources for students in remote or rural areas. AI – chatbots can be designed to incorporate culturally relevant contents and examples, when barriers such as teacher training and limited infrastructure to the complete adoption of chatbots instruction in indigenous language learning are satisfied with sustainable solutions.

Conclusion

Based on the findings of this study, it was revealed that AI – powered chatbots instruction significantly enhanced indigenous language learning in Ogbomoso North Secondary Schools by improving students' engagement, motivation, proficiency and other skills of language. However, besides the barriers of using AI – powered chatbots for teaching such as lack of teachers' awareness, insufficient infrastructure and free access to resources, integrating AI chatbots offers is effective in assisting, empowering students and preserving Nigeria's indigenous languages for the coming generations.

Recommendations

The following are the recommendations on the study:

1. The stakeholders in language education should expand the implementation and broaden the reach of AI – powered chatbots in secondary schools to allow more students and promote language preservation.
2. Responsible and concerned individuals on the use of chatbots instruction should promote interdisciplinary teamwork and foster partnerships among educators, technologists, and community language experts to develop effective and culturally sensitive language learning options.
3. Native language experts should be involved in developing and validating chatbots content to ensure cultural relevance and accuracy.
4. As a policy, AI – powered chatbots should be incorporated into language education to enhance language learning outcomes and promote cultural preservation.

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Impact of Artificial Intelligence Tools on Senior Secondary School Students' Critical Thinking in English Written Composition

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Abstract

This study examined the impact of AI tools on senior secondary school students' critical thinking in English written composition. The Quasi-experimental research design was employed, involving two groups of students: one exposed to AI-assisted writing tools and the other taught through traditional instructional methods. Data were collected through a validated students' English Written Composition Achievement Test (SEWCAT) and analysed using inferential statistics (ANCOVA). Findings revealed that students who engaged with AI tools demonstrated significant improvement in critical thinking skills, particularly in argument organization, coherence, and originality of ideas. However, over-reliance on AI generated concerns about reduced creativity and independent reasoning. The study concluded that AI can be a valuable resource for enhancing critical thinking if integrated with guided teacher support. It recommended balanced pedagogical strategies that combine AI-driven feedback with human instruction to foster both competence and creativity in English composition.

Keywords: Artificial Intelligence, Critical Thinking, English Composition, Secondary Education

Introduction

The increasing influence of Artificial Intelligence (AI) on education is one of the most defining trends of the 21st century. In language learning, particularly in writing, AI tools (ChatGPT, Grammarly, QuillBot, EssayBot, etc) are reshaping how students approach academic tasks. For senior secondary school students, these tools offer convenience in generating and refining written texts. However, they also raise critical questions about their effect on deeper academic competencies like critical thinking, especially in English written composition. While AI tools are known to improve surface-level writing by correcting grammar, punctuation, and structure, concerns are emerging about their potential to reduce students' active cognitive involvement in writing processes.

English composition is a fundamental aspect of language education in Nigerian secondary schools. Writing tasks such as essays, letters, and articles not only assess grammatical competence but also demand that students express logical reasoning, coherent argumentation, original thought, and evaluative judgment. These requirements align with Facione's (2015) definition of critical thinking as a purposeful, self-regulatory judgment involving analysis, inference, and explanation. As such, the composition classroom is not just a place to learn grammar but also a space to develop cognitive skills essential for academic and real-world problem-solving.

The introduction of AI into the learning process has altered how students engage with these tasks. Increasingly, students are using AI applications not just for support but as substitutes for the intellectual labour of writing. For example, platforms like ChatGPT can produce entire essays with limited input, which, while efficient, may discourage students from investing the mental effort needed for idea generation and logical organization. Luckin et al. (2022) warn that such ease of use can reduce students' motivation to engage deeply with content. In a similar vein, Popenici and Kerr (2022) argue that over-reliance on AI can foster academic passivity, undermining the independent

thinking that traditional writing practices are meant to cultivate.

In Nigeria, where high-stakes examinations such as the West African Senior School Certificate Examination (WASSCE) assess writing proficiency, critical thinking remains essential. Tasks demand students to analyze social issues, present balanced arguments, and express informed opinions. However, with increased smartphone penetration and internet access, students can now use AI tools discreetly—sometimes without teacher oversight—to generate or edit essays. This trend has sparked debates around academic integrity, skill acquisition, and the long-term development of learners' reasoning capacities.

Despite widespread concerns, educational policy frameworks continue to prioritize critical thinking. The Federal Ministry of Education (2013) emphasizes nurturing critical and creative thinking to prepare students for societal contribution. Similarly, UNESCO (2020), through its Education 2030 Agenda, identifies critical thinking as a core skill for 21st-century learners. Yet, the unregulated use of AI in students' writing practices may be undermining these objectives. In practice, many classrooms have not adapted their methods or assessments to account for this technological shift.

Holmes et al. (2022) point out that although AI tools are increasingly present in educational settings, most teachers and learners lack structured guidance on their pedagogical use. In the absence of training and supervision, students tend to explore AI independently, often using it to meet immediate performance goals rather than to support long-term cognitive development. For example, some may rely on AI to paraphrase assignments or generate essay drafts without reflecting on content or structure. This undermines the formative value of writing as a tool for developing and expressing thought.

Nevertheless, some researchers present a more balanced view. Salas-Pilco et al. (2023) contend that AI, if properly integrated into instruction, can enhance rather than inhibit critical thinking. According to them, AI tools can serve as cognitive scaffolds—helping students develop arguments, revise drafts, and improve clarity—provided they are used under ethical and pedagogical frameworks. Grammar checkers and summarization tools, for instance, can foster revision habits and comprehension. However, these benefits are only realizable when educators establish clear usage policies and teach students how to interact meaningfully with such technologies.

Unfortunately, empirical evidence on the impact of AI on critical thinking among secondary school students, especially in Nigeria, is limited. Most available research focuses on higher education, where students are presumed to have better-developed digital and cognitive skills (De Simone, *et al.* 2025; Vieriu, *et al.*, 2025). This study, therefore, seeks to examine the impact of AI tool usage on students' critical thinking in English written composition.

Research Objective

The main objective of this study is to examine the effect of AI-assisted writing tools on the development of senior secondary school students' critical thinking skills in English written composition.

Hypothesis

Ho_1: There is no significant effect of AI-assisted writing tools on students' critical thinking skills in English written composition.

Literature Review

Artificial Intelligence (AI), such as *Grammarly*, *ChatGPT*, *chatbots, etc.,* has become one of the most influential innovations shaping contemporary education. Scholars generally define AI as the ability of machines

or computer systems to perform tasks that normally require human intelligence, such as problem-solving, decision-making, and language processing. In the educational context, AI refers to the application of these intelligent systems to enhance teaching, learning, and assessment. For instance, Luckin et al. (2016) describe AI in education as "technologies designed to replicate, augment, or extend human teaching and learning processes," emphasizing its role in personalizing instruction and supporting teachers. Similarly, Chen et al. (2020) highlight that AI is not limited to automation but also involves adaptive systems that learn from data and provide customized learning pathways for students.

The scope of AI in education is broad and continually expanding. It includes intelligent tutoring systems that offer step-by-step guidance, automated writing evaluators that provide feedback on grammar and coherence, chatbots that simulate teacher–student interaction, and predictive analytics that help identify students at risk of underperforming. According to Holmes et al. (2019), these applications demonstrate the versatility of AI as a pedagogical tool, supporting both administrative and instructional functions. In addition, UNESCO (2021) recognizes AI as a catalyst for inclusive and equitable education, noting its potential to address challenges such as large class sizes, limited teaching resources, and learner diversity.

Nevertheless, scholars such as Luckin *et al.,* (2016), as well as Holmes, *et al*. (2022), caution against viewing AI as a replacement for teachers. Rather, it should be seen as a supportive tool that complements human instruction by enhancing personalization, feedback, and learner engagement.

As Selwyn (2019) argues, the scope of AI in education must be understood in relation to broader ethical, cultural, and pedagogical contexts, since technology alone cannot address the complexities of human learning. This balanced perspective underscores that while AI offers powerful opportunities for personalization, efficiency, and access, its integration should be carefully aligned with sound educational principles.

Critical thinking is widely acknowledged as a fundamental cognitive skill that underpins effective learning and problem-solving. Although definitions vary, scholars generally agree that it involves the ability to analyze, evaluate, and synthesize information in order to make reasoned judgments. Facione (2015) defines critical thinking as "purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference." This definition emphasizes both the cognitive and reflective dimensions of the concept. Similarly, Ennis (2018) views critical thinking as a form of reasonable and reflective thinking focused on deciding what to believe or do, highlighting its application in both academic and everyday contexts.

The skills embedded in critical thinking are multifaceted. According to Paul and Elder (2014), they include interpretation, analysis, inference, explanation, evaluation, and self-regulation. These skills work together to enable learners question assumptions, examine evidence, detect inconsistencies, and draw logical conclusions. Halpern (2014) adds that critical thinking also involves dispositions such as open-mindedness, intellectual curiosity, and the willingness to reconsider one's views in light of new evidence. In the language classroom, these skills translate into the ability to structure arguments, evaluate sources, and present ideas coherently.

The importance of critical thinking in writing cannot be overstated. Critical thinking plays a central role in the teaching and learning of English composition, as it enables learners to move beyond surface-level writing to produce coherent, logical, and persuasive texts. Writing is not only a linguistic exercise but also a cognitive process that requires students to analyze information, evaluate evidence, and synthesize ideas in a meaningful way. As

Cottrell (2017) observes, critical thinking equips learners with the ability to question assumptions, detect bias, and construct arguments that demonstrate depth and originality. In this sense, critical thinking transforms composition from the mechanical production of sentences into a process of intellectual engagement.

One of the most significant contributions of critical thinking to composition is the promotion of clarity and coherence. According to Fisher (2020), students who apply critical thinking are better able to organize their ideas logically, ensuring that each part of their essay contributes meaningfully to the whole. Similarly, Atkinson (2011) argues that critical thinking enables learners to distinguish between relevant and irrelevant information, thereby improving the quality of argumentation in their writing. This skill is particularly important in academic contexts, where students are expected not only to present information but also to justify and defend their viewpoints.

Furthermore, critical thinking fosters creativity and originality in written composition. Facione (2015) notes that when students are encouraged to question and reflect critically, they are more likely to generate unique insights rather than simply reproducing memorized content. This ability to think independently and innovatively enhances the persuasiveness of their writing, making it more engaging for readers. In the same vein, Halpern (2014) stresses that critical thinking promotes reflective judgment, which allows students to refine their ideas through drafting, revising, and editing which are critical stages in effective composition.

The importance of critical thinking in English composition lies in its capacity to develop students into reflective, analytical, and independent writers. By engaging critically with content, learners not only improve their linguistic competence but also cultivate essential life skills such as problem-solving, decision-making, and effective communication. Thus, as Paul and Elder (2014) affirm, critical thinking is not an optional add-on in writing instruction but a fundamental skill that underpins meaningful and impactful composition.

English written composition is a central component of language education, as it requires learners to express ideas in a coherent, structured, and meaningful way. Scholars agree that composition is more than just the act of writing sentences; it is a process that integrates cognitive, linguistic, and communicative skills. Hyland (2016) explains that written composition involves generating ideas, organizing them logically, and presenting them in ways that are appropriate to audience and purpose. Similarly, Weigle (2014) conceptualizes composition as a multidimensional activity that draws on grammar, vocabulary, mechanics, and rhetorical organization, making it both a linguistic and a cognitive task.

Despite its importance, students often face significant challenges in mastering English written composition. According to Nunan (2003), learners struggle with generating ideas, maintaining coherence, and applying grammatical rules accurately. In contexts where English is a second language, challenges are even greater due to limited vocabulary, interference from the mother tongue, and insufficient exposure to authentic writing practices (Akinwamide, 2012). Additionally, Oluwadiya (2020) notes that students frequently approach writing as a product rather than a process, focusing on producing a final draft rather than engaging in drafting, revising, and editing. This tendency often results in weak argumentation, mechanical errors, and lack of originality.

To address these challenges, various teaching approaches have been developed. The product approach**,** which dominated traditional classrooms, emphasizes accuracy, grammar, and the final written text (Silva, 1990). In contrast, the process approach focuses on writing as a recursive activity involving

brainstorming, drafting, peer review, and revision (Seow, 2002). The genre-based approach has been advocated, where students are taught to recognize and reproduce the linguistic and structural conventions of different text types (Hyland, 2004). Each of these approaches offers unique benefits: the product approach ensures grammatical correctness, the process approach fosters creativity and reflection, and the genre approach equips learners with skills for functional communication. Scholars such as Badger and White (2000) recommend an integrated approach that combines these models to balance accuracy, fluency, and communicative effectiveness.

Above all, English written composition is a complex but essential skill that demands both linguistic competence and critical engagement. While students encounter persistent challenges such as limited vocabulary, weak organization, and lack of critical reflection, the evolution of teaching approaches—from product to process to genre-based models—offers multiple pedagogical pathways for improving learners' writing proficiency.

Theoretical Framework

Cognitive Learning Theory

This study is anchored on Cognitive Learning Theory (CLT)**,** propounded by Albert Bandura (1977), which emphasizes the active role of learners in acquiring knowledge through mental processes such as attention, memory, organization, and problem-solving. Unlike behaviorist approaches that view learning as a mere response to stimuli, CLT suggests that learners construct meaning by engaging in deliberate thinking, connecting new information with prior knowledge, and applying strategies to solve problems. In the context of English written composition, this perspective is highly relevant because writing is not just a mechanical act but a cognitively demanding process that requires planning, organization, reasoning, and reflection.

Writing, as described by Flower and Hayes (1981), is recursive in nature, involving stages of planning, drafting, reviewing, and revising. Each of these stages draws heavily on cognitive processes. For example, during planning, students must recall prior knowledge and organize ideas; while drafting, they must arrange arguments logically and coherently; and in reviewing, they must evaluate their reasoning, spot inconsistencies, and refine their work. Students who lack strong cognitive strategies often struggle with coherence, originality, and critical thinking in writing, which underscores the importance of instructional approaches that actively support these mental processes.

Artificial Intelligence (AI)-assisted writing tools align closely with the principles of CLT because they serve as cognitive scaffolds that enhance learners' engagement with the writing process. By providing real-time feedback on grammar, coherence, argument structure, and style, these tools make learners' thought processes more visible. For instance, when AI highlights weak transitions, it prompts students to rethink the logical flow of their arguments. Similarly, when it suggests alternative vocabulary, it pushes them to engage in deeper lexical and semantic reflection. In this way, AI tools help learners monitor their thinking, adjust their strategies, and internalize effective writing practices—an essential component of metacognitive development.

Metacognition, or the ability to reflect on and regulate one's own thinking, is central to CLT. AI tools support this by encouraging students to become aware of errors, redundancies, or unclear reasoning in their writing. As Anderson (2010) argues, learning becomes meaningful when students are able to evaluate their reasoning and regulate their strategies. Thus, AI tools not only guide learners in the immediate task of composition but also cultivate long-term skills in self-regulation and independent judgment.

However, CLT also cautions that while scaffolds are useful, they should not replace the learner's cognitive effort. Over-reliance on AI may reduce opportunities for independent creativity and problem-solving, leading to surface-level learning rather than deep understanding. Selwyn (2019) and Akgun and Greenhow (2022) stress that technology in education should be used to enhance, rather than diminish, learners' active role. This means teachers must provide clear guidance to ensure that AI functions as a support system rather than a substitute for critical engagement.

Methodology

This study employed the quasi-experimental research design using a pre-test, post-test, control group format to investigate the impact of artificial intelligence tools on senior secondary school students' critical thinking in English written composition. After selecting the two schools through a simple random sampling technique, the study employed purposive sampling to select 25 students from each school. The inclusion criteria required that students be in the same class level (Senior Secondary II) and available throughout the study period. This ensured comparability between the experimental and control groups. Thus, a total of 50 students (25 per group) participated in the study. Data were collected using a validated instrument, the Students' English Written Composition Achievement Test (SEWCAT)**,** which has a reliability coefficient of 0.72. The study followed a pre-test, treatment, and post-test procedure, with the pre-test establishing baseline performance before the intervention. After the treatment, a post-test was administered to both groups, and the data obtained were analyzed using Analysis of Covariance (ANCOVA) at the 0.05 level of significance to determine the effect of the intervention while controlling for initial group differences

Data Presentation and Analysis

Ho_1: There is no significant main effect of AI-assisted writing tools on students' critical thinking skills in English written composition.

Table 1: Summary of Analysis of Covariance of Students' Critical Thinking Scores in English Written Composition

Source	SS	df	MS	F	Sig. (p)	Partial η^2
Corrected Model	650.00	2	325.00	21.67	< .001	—
Intercept	9,450.00	1	9,450.00	630.00	< .001	—
Pre-test (covariate)	330.00	1	330.00	22.00	< .001	**.32**
Group (Experimental vs Control)	**270.00**	**1**	**270.00**	**18.00**	**< .001**	**.28**
Error	705.00	47	15.00	—	—	—
Total	21,805.00	50	—	—	—	—
Corrected Total	1,355.00	49	—	—	—	—

*** indicate significant F at .05 level**

The result in Table 1 shows the outcome of the analysis to test the effect of AI-assisted writing tools on students' critical thinking skills in English written composition. The result of the analysis showed that there is a significant main effect of AI-assisted writing tools on students' critical thinking skills in English written composition, $F(2, 47) = 21.67$, $p < .001$, indicating that the combination of the pre-test covariate and the instructional method (group) significantly explained variation in students' post-test performance. Overall, the model accounted for approximately 48% of the variance in post-test scores, suggesting that nearly half of the differences in students' performance could be explained by the

covariate and the treatment. The pre-test covariate had a significant influence on the post-test outcome, $F(1, 47) = 22.00$, $p < .001$, with a partial η^2 of .32. This shows that the treatment effect of instructional method (experimental versus control group) was statistically significant, $F(1, 47) = 18.00$, $p < .001$, with a partial η^2 of .28. This result indicates that students in the experimental group who were taught English written composition using AI-assisted writing tools performed significantly better in the post-test than their counterparts in the control group taught with traditional methods. The effect size was large, suggesting that the intervention had a substantial impact on students' critical thinking abilities, particularly in logical reasoning, coherent argumentation, originality of thought, and evaluative judgment

Table 2: Adjusted Post-test Means (Controlling for Pre-test)

Group	Adj. Mean	Std. Error	95% CI Lower	95% CI Upper
Experimental (AI-assisted)	**78.4**	0.78	76.8	80.0
Control (Traditional)	**69.1**	0.78	67.5	70.7

Table 2 presents the adjusted post-test means of the two groups after controlling for pre-test performance. The results revealed that students in the experimental group, who were taught English written composition using AI-assisted writing tools, obtained a significantly higher adjusted mean score **(**M = 78.4, SE = 0.78; 95% CI [76.8, 80.0]**)** than those in the control group taught through traditional instructional methods **(**M = 69.1, SE = 0.78; 95% CI [67.5, 70.7]**).** The confidence intervals for the two groups do not overlap, which provides further evidence that the difference in performance was statistically meaningful and not due to chance. The approximately 9-point mean difference indicates that students in the experimental group consistently outperformed their counterparts in critical thinking aspects of composition writing skill such as logical reasoning, coherence, originality, and evaluative judgment. Thus, the adjusted post-test means confirm that the use of AI-assisted writing tools had a significant positive effect on students' performance compared to traditional teaching methods, even after accounting for baseline ability levels.

Table 3: Pairwise Comparison (Adjusted for Covariate)

Contrast	Mean Difference (Exp − Ctrl)	Std. Error	F	Sig. (p)
Experimental vs Control	**9.30**	2.19	**18.00**	**< .001**

*** denotes pairs of groups that are significantly different at P < 0.05**

The pairwise comparison of adjusted post-test means, controlling for pre-test scores in table 3, showed a statistically significant difference between the experimental and control groups. Specifically, students in the experimental group who were taught with AI-assisted writing tools scored on average 9.30 points higher than their counterparts in the control group ($SE = 2.19$). This difference was statistically significant, $F(1, 47) = 18.00$, $p < .001$, indicating that the higher performance of the experimental group was not due to chance. The magnitude of this difference confirms that the intervention had a substantial and positive effect on students' written composition skills. In practical terms, the experimental group demonstrated stronger logical reasoning, coherence, originality of thought, and evaluative judgment compared to the control group.

Discussion of Findings

The results of this study revealed that students taught with AI-assisted writing tools significantly outperformed those taught

through traditional instructional methods in their English written composition. The experimental group demonstrated greater logical reasoning, coherent argumentation, originality of ideas, and evaluative judgment. These findings suggest that the integration of AI tools into classroom practice has the potential to enhance students' critical thinking skills in meaningful ways. This result is consistent with the findings of Anderson (2010)**,** who argued from a cognitive learning perspective that learning occurs when learners actively process information, organize ideas, and apply reasoning to new contexts. By providing scaffolding and instant feedback, AI tools appear to stimulate these cognitive processes, helping students refine their ideas and structure their arguments more effectively. Similarly, Johnson and Matthews (2019) found that the use of digital writing assistants in secondary schools improved students' coherence and organization in essay writing, aligning closely with the outcomes of this study.

However, the present study also emphasised concerns regarding students' over-reliance on AI, which may limit creativity and independent reasoning. This finding aligns with the caution raised by Kerr and Lawson (2020)**,** who argued that excessive dependence on AI-generated content may discourage learners from engaging deeply with their own ideas. Taken together, the findings of this study reinforce the dual nature of AI in education. On one hand, AI tools provide valuable opportunities for enhancing critical thinking and written composition. On the other hand, the risks of dependency highlighted here echo concerns raised by earlier scholars, underscoring the need for careful instructional guidance.

Conclusion

This study investigated the impact of Artificial Intelligence (AI) tools on senior secondary school students' critical thinking in English written composition through a quasi-experimental approach. The findings clearly showed that students exposed to AI-assisted writing tools performed significantly better than their peers who received traditional instruction. The intervention improved important aspects of critical thinking, including logical reasoning, coherent argumentation, originality of thought, and evaluative judgment. At the same time, the study emphasised a cautionary note. While AI tools proved to be highly effective, the tendency for students to rely too heavily on them raises concerns about the possible decline in creativity and independent reasoning. This means that although AI has great potential as a teaching and learning aid, its use must be carefully managed. Above all, the study concludes that, AI-assisted writing tools are valuable resources that can substantially enrich the teaching and learning of English written composition. They provide meaningful support for developing critical thinking skills, but their integration into classrooms should be balanced with strategies that encourage students' independent thinking and creativity.

Recommendations

One of the major recommendations arising from this study is that English language teachers should integrate AI-assisted writing tools into the teaching of written composition. Such integration has the potential to enrich classroom practice by supporting students in developing stronger critical thinking and writing skills. Equally important is the role of teacher guidance in ensuring that the use of AI does not lead to dependency. Teachers should provide clear direction on how students can engage with AI outputs critically, using them as scaffolding rather than as replacements for independent thought. In this way, AI becomes a supportive tool that enhances learning while still preserving the essential goals of creativity, originality, and self-directed reasoning in written composition.

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Reforms for Education and Gender Disparity in Arabic Studies

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Abstract

Repositioning Education sector in the right direction should be a good omen to any developing nation. The reason being that its resultant effect affects positively all fields of discipline, be it humanity or science and should fetch for the nation further development in all spheres of human endeavours. Furthermore, such reforms should address different and various issues that are found to be deficient in the current policy with a view to position them in the right direction. Such issues are gender education, education of people with special needs, nomadic and adult education among others. It is against this background that these writers examine the issues of gender inequity in the field of Arabic Studies in Nigeria. The paper therefore traces briefly the history of Arabic education in Nigeria and discusses the gender participation to the present time. It also dilates on the problems and the way forward in the current education reforms in the country.

Keywords: Nomadic, gender inequity, gender participation, dilates, education reforms

Introduction:

According to the (2015) 8th edition of the world's most trusted dictionary – Oxford Advanced Learner's Dictionary, to "REFORM" is to improve a system, an organization, a law, by making changes to it. Hence, a "REFORM" is a change that is made to a social system, an organization, etc in order to improve or correct it.

At any given point in time and in any given society, "Reform" can take place in any stratum of human development be it economic, electoral, constitutional, religious, educational etc. For instance, in the area of religion and as used by Ogunbiyi (1969), the jihad led by Uthman bn. Fudi against the rulers of the central Sudan at the beginning of the nineteenth century has its principal aim the "reform" of Muslim society. Islam, the official religion of the rulers and the populace was laxily practiced, hence, the need for reform.

Imam (2017) expressing the views of Eilor etal (2003) asserts that educational reforms are often undertaken as systematic efforts designed to bring about a large scale changes to the education system by expanding and improving on it so as to get it better adapted to the needs of the society. According to her, educational reforms is hinged on the assumption that such reform would bring positive change to educational practices and process. Adam (2011), therefore, concludes that any reform in education must automatically affect positively on economic, social and political situations in both developed and developing countries.

Imam (2017) quoting further Moreno (2006), notes that educational reforms all over the world is increasingly curriculum-based as mounting pressures and demand for change tend to target and focus on both the structures and the very content of school curricula.

Adam (2006) stresses that changes in education often come about when the current practices are challenged, and questions are being asked about the way things are done. He further asserts that the search for a more efficient way of achieving educational objective may lead to proposal for either a new way of doing the same thing, or restructuring the current provision to enable achievement of the same set of goals. Imam (2017) opines that since independence, Nigeria as a federation has been facing challenges involving education reforms which appear to base on a rethinking of the role of education in national development. According to her, myriad of problems have bedeviled these reforms.

Nigeria as a developing nation cannot resist the urge to reposition its education sector from time to time. Hence, Adam (2006) points out that the main innovation in Nigeria post-

independence educational development was the National Policy on Education commonly referred to as the 6-3-3-4 education system which replaced the previous 6-5-2-3 system. Henceforth, education is taken as an instrument par-excellence for the overall development of the country. However, Ifei (2007) opines that certain problems ranging from under funding, infrastructural decay, poor remuneration to teachers and other staff, the brain drain, inconsistent policy formulation, examination malpractices cultism, etc. had degraded the educational system such that its products can no more stand tall among the comity of nations. Recently, menace of Yahoo syndrome and obnoxious Bokoharam and banditry problem are affecting negatively on education.

New Reforms in Nigeria Education

Current education reforms in Nigeria is condensed into minimal but well focused curricula in order to minimize cognitive load. With this new reforms, trade subjects are brought into the curriculum aiming at improving employability. In addition, the new reforms brings into limelight history as a compulsory subject. More so, The reforms also upgrades Technical Colleges, and improves teacher training with a focus on digital literacy. It also seeks to implement a national policy on anti-bullying. More importantly, the reforms incorporates technology across all levels and provides ample access to tertiary education particularly with introduction of Nelfund.

Meanwhile, observers have expressed that proper and adequate implementation of the reforms may prove difficult due to rushed timeline, inadequate resources and infrastructure and teacher training.

Languages in Education Reforms

The 2004 revised edition of the National Policy on Education NPE expresses the importance of languages as a means of promoting social interaction and national cohesion; and preserving cultures. Oladosu (2007) stresses that languages are generally fundamental to the whole process of education. He explained further that without Language, there could be no form of education.

However, the new education reforms sideline indigenous languages this time around based on what the government and policy makers terms poor performance of students with the previous implementation of indigenous languages. Hence, the English language is now the only major and fundamental means of instruction in our educational system. Although, this is being criticized, but government stands on this new policy remains unchanged.

Arabic Studies in Nigeria

The history of Arabic learning in Nigeria dates back to the history of Islam and Islamic education. It started from the far North and streamed down the South West. In its inception, it was an informal mode of education but later both formal and informal system of education are adopted till the present day Nigeria. Arabic was the first language that introduced literacy to Nigerians. Abdul (1981) emphasizes that, from the 16th century, Kano and Kastina had been famous centers of learning with Arabic as the language of literacy and instruction.

The monopoly of Arabic as the sole language of literary in the precolonial Nigeria was challenged with the introduction of Western System of Education by the missionaries cum Colonial masters. Before then, the Northern Nigeria Arabic literates had adopted ‘Ajami-Arabic characters in rendering Hausa language into written form. However, with the enforcement of their rule on Nigeria, the British Colonial Master forced Nigeria to adopt English as official language and that of instruction in the school system.

By this action of the colonialists, the spread of Arabic Language was drastically reduced. But it was not possible for the colonialist to totally obliterate the language in Nigeria due partly to its significance to the populous Nigerian Muslims and also for its importance as a foreign language which is

required for cultural, diplomatic and economic link with the Arabic speaking countries. Hence, from about 1934 as Abdul (1981), Raji (2002) claimed, Nigeria government officially showed interest in Arabic with the establishment of "Northern Law School" which metamorphosed later to "School for Arabic Studies" in 1947, Center for Arabic Documentation was also established at the University of Ibadan in 1950s, headed by William Kensdale-the then Deputy Liberian, for the preservation of valuable and numerous Arabic manuscripts that contained learning of various disciplines and authentic information on Africa (Malik 1999)and (Raji2002). Later, the department of Arabic and Islamic studies was established at the University of Ibadan. Also, in Kano, satellite campus of Ahmadu Bello University Zaria, was established, and emphasis was laid on Arabic and Islamic studies learning. Arabic is made part of the student curriculum in all North and some schools in the West particularly those schools owned by Islamic bodies. It is worth mentioning here that much of the success achieved by Arabic education in the Western part of the country till today lies in the efforts of private non-governmental bodies and individuals.

Meanwhile, the new reforms position Arabic as a core subject with the aim to standardize its curricula and attempt to incorporate traditional Arabic and Islamic education systems into the formal structure. The key aspect of the reforms for Arabic studies include: Curriculum integration, incorporation of traditional systems, Teacher training and development, infrastructure and partnerships, Focus and broader skills etc.

The Concept of Gender

The term 'gender' refers to the social construction of female and male identity. It can be defined as more than biological differences between men and women. It includes the ways in which those differences whether real or perceived, have been valued, used and relied upon to classify women and men and to assign roles and expectations to them. In the words of Etim-Jame (2024) gender inequality is an extremely old phenomenon deeply rooted in many cultures across the world. In her opinion Gender is only an artifact of a socially accepted form of indoctrination. Her theory is that, while some cultures debar women from going to war, It is not to be generalized, for cases of women leading war existed and example of such is the case of Queen Moremi.

There is a difference between gender equality and gender equity and while the latter can be easily achieved if necessary machineries are put in place, the former may be difficult to achieve or not achievable at all. For further clarification, Gender equality is based on the premise that women and men should be treated in the same way. This notion fails to recognize that equal treatment will not produce equitable results because women and men have different life experiences. However, gender equity takes into consideration the differences in women's and men's lives and recognizes that different approaches may be needed to produce outcomes that are equitable.

According to SIA news Publication the proponents of gender examines the system of roles and relationships between men and women that are determined by society in the contents of is culture and traditions, and socio-economic conditions in the development process. They also examine the differential impact of the gender roles and relationships as socially constructed on individuals, society and the development process. The proponents suggested strategies for promoting gender responsive development and justice. Sometimes, this requires change in attitude and medication or even eradication of some cultural and traditional practices. Hence, because of the growing consensus that sustainable development can be attained only through inclusive and equitable efforts, taking into consideration the interdependence of economic, social, cultural and environmental factors. In this context, the full participation of all individuals in aspects of societal life must

be ensured. This is more reason why Adeosun et-al (2021) emphasize that girl child education should be upheld to reduce poverty, societal tolerance and economic development.

Arabic and Gender Participation

Arabic is like any other language of the world. It is a standard language and one of the thirteen most important languages in the world today. Arabic represents Semitic languages in terms of global and international acceptability and recognition. It is a very rich language in terms of vocabulary and diction and had contributed immensely to the development of many world languages both local and international.

Lot of disparities have been observed in the area of male and female enrolment in Arabic studies compared to other languages in our educational institutions. English, being an imposed foreign language on Nigeria, enjoy patronage from both gender. French is also picking up. Arabic, even in spite of its important link to a larger percentage of Nigerians, is not well patronized particularly by female. It is discovered that sex roles ideology had continued to affect negatively on the enrolment of female in Arabic studies. Whereas National Policy on Education emphasizes equal opportunities for all citizens regardless of gender in terms of biological sex categories. Other factors, according to Shittu (2006) that are responsible for this inequity include religious and cultural constraints, in-equality in access to education, negative views of the parents on the intrinsic and extrinsic value of Arabic education, gender discrimination in the places of work, teachers competences; learners motivation etc.

Oluwafemi (2019) asserts that although the holy Qur'an posits neutral gender, patriarchal gender-based requires have been successful in imposing their conservative, male dominated, misogynistic attitudes and religious interpretations to control and or disregard Muslim woman in a changing and dynamic Islamic society.

Fadeiye (1995) also claims that the prejudice and discriminatory practices against women and their education were deep-rooted in socio-cultural and religious ideologies. However, this claim can only be partly accepted because of the Socio-cultural practices of Africans and Nigerians in particular which regards woman as subordinate to men. But having said this, there is no religious evidences that pronounce denial of woman of their right to education. Taking Islam as an instance, the Qur'an advocated Reading and Learning and compels Muslim male and female to acquire them (Q chapter 96 vs 1-5). The prophet of Islam corroborates further by making knowledge mandatory on *Sahih Bukhari* for both male and female Muslims. More importantly, in the words of Ogunbiyi (1969) the most outstanding reforms advocated by Shaikh Uthman B. Fudi within the Hausa/Fulani Muslims Community of his time was the education of women. According to shaykh Uthman B. Fidu as quoted by Ogunbiyi opcit from former's-*Nurul-albab*.

> *They treat their wives, daughters, and slaves like household implements which are used until they are broken and then thrown onto the rubbish heap. Alas! How can they abandon their wives, daughters and slaves in perpetual darkness while they daily impart knowledge to their students.*

Lamenting on this obnoxious situations, Esne (1983) adds that such women remain permanently illiterate since they are shut out of the various educational programmes designed for the advancement of the country.

Fadeiye (1995) opines that women population is generally considered and acclaimed higher than that of men. If this is taken and accepted as naked truth, then, women involvement and participation in education should be more pronounced particularly in Arabic in the Nigerian educational system.

Kankawi (2006) in his discussion on the problems of Nigeria women in Arabic education explained that women participated actively and reached greater heights to stand at par with men in Arabic studies in the pre-colonial Nigeria particularly during the Sokoto caliphate. He cites example of Seyyidah Asmau and Seyyidah Maryam both of whom were Arabic guru. However, he was quick to add that in modern day Nigeria women's participation is almost zero except remnants that is observed at the secondary level in our privately own Arabic institutions.

Women enrolment for Arabic in Nigeria tertiary institution is nothing to write home about. In the Analysis of Shittu (2006) on the Arabic students in selected Tertiary institutions 2000/2001 Academic session, Osun State Colleges of Education Ila-Orogun and Ilesa recorded 2 and 3 female respectively. Lagos State University has I, while both Unibadan and Unilorin had no female enrolment. More so, Jamiu, (2007) in his own research discovered that of the 117 Arabic students in all the three Colleges of Education in Oyo State in the 2007 academic session only 13 were female.

The reason for this poor enrolment as explained by Shittu (2006) ranges from lack of rudimentary knowledge of Arabic from the primary level, inability to cope with the post-primary Arabic syllabi which look like magic in presentation, strangeness of Arabic letterings, inability to adjust quickly and steadily to writing from right to left unlike European character which the students are used to, and lastly unavailability of modern instructional materials.

Conclusion

In conclusion, Arabic education in Nigeria needs reformation most especially as it affects gender participation. But to achieve this noble goal the government, parent and society should develop a positive perception towards effective participation of female in the discipline. The subject must not be taken as optional, other foreign languages being studied at both primary and post-primary must not be given special preference at the expense of Arabic. Untenable and unarguable excuses like cultural, religious, level of intelligent quotient as well as marital impediments should be carted away if Nigeria as a developing nation is seriously willing to remove bias of gender participation and inequity in relation to educational reform in our society.

Recommendations

Based on the above discussion the following recommendations are made in order to reduce gender inequity as an impediment and cog in the development of Arabic studies in the new tide of education reforms in the country.

A – Government should provide necessary incentive to facilitate the study of Arabic right from pre-primary and primary levels of our educational system. A situation where the Nigeria government would leave the acquisition of Arabic education at the primary and secondary levels of our educational system in the hand of individual interested in the language should stop. Government should as a matter of urgency encourage the study of Arabic in primary and post primary schools by compelling the policy makers, professionals Arabists and curriculum planners to design a simplified curriculum that suits modern-day demand of Nigerians that are keenly interested in studying it at all levels of our educational system. If this is done, enrolment for Arabic will increase especially from the women folks. Hence, the notion of gender bias and equity in education, which is one of the main focuses of the call for reform for education in Nigeria, will be achieved.

The notion that Arabic is "Kewu" and "Kewu" soro ke" meaning "Arabic is cumbersome" should be discarded. Arabic is like any other language which requires determination for its acquisition. It is a known fact that women are good potential for language acquisition and they are good and

better in spoken skills as news casters, the more reason why in Arabic education, women should be given the chance to participate actively if the new reform is to be taken seriously.

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