IREELL
Indonesian Review of English Education, Linguistics, and Literature
P-ISSN:3025-2369 I E-ISSN:3021-8101
https://jurnalfaktarbiyah.iainkediri.ac.id/index.php/ireel/index

E-Tutoring versus Direct Instruction: Effects on Primary School Pupils' English Performance in Ondo State, Nigeria

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ABSTRACT

The study investigated the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State, Nigeria, using a non-equivalent pre-test-post-test control group quasi-experimental design. The study included 305 primary four pupils from eight intact classes across four public and four private schools, stratified by school location (urban/rural) and school type (public/private). Schools were randomly assigned to experimental (e-tutoring) and control (direct instruction) conditions, with one experimental and one control group per location-type combination. The English Language Academic Performance Test (ELAPT) served as the pre-test and post-test instrument over a six-week intervention. The data were analysed using a three-way Analysis of Covariance (ANCOVA). Findings showed a significant difference in academic performance favouring e-tutoring over direct instruction overall, and this advantage held across both public and private schools and across urban and rural areas. However, the effect varied significantly by school type. The study recommends giving English Language tutors more exposure to e-tutoring during training and providing adequate multimedia support and infrastructure for effective classroom use.

Keywords: direct instruction, e-tutoring, private school, public school, rural area, urban area

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Introduction

The English language holds a vital position within Nigeria's education system, serving as the official medium of communication, science, technology, and commerce. It is the mandated language of instruction commencing from upper primary education through tertiary levels, thereby playing a pivotal role in students' academic success and their engagement with both national and global knowledge economies. In Nigeria's multilingual context, where over 500 indigenous languages coexist, English functions as the primary medium for extended communication and educational development. Consequently, proficiency in English influences students' achievement not only in the language itself but also across other academic subjects taught in English.

Nonetheless, its significance does not translate into high achievement, and concerns remain, particularly about pupils' low performance in English Language at the primary school level, where high standards are expected to build a solid foundation. Students tend to continue underperforming in reading comprehension, vocabulary, grammar, writing, and oral communication in their subsequent studies. UNESCO (2023) emphasized that addressing foundational literacy is essential for improving educational quality and fostering lifelong learning. Similarly, the United Nations Children's Fund (UNICEF, 2024) indicated that learning poverty is prevalent in many low- and middle-income countries (LMICs) such as Nigeria, where numerous children are unable to read and understand age-appropriate texts by the end of primary education. The reports underline the importance of developing effective instructional approaches to enhance English language learning in the early years.

The increased emphasis on pupils' achievement has resulted in a heightened interest in instructional methodologies that promote active engagement, cooperation, critical analysis, and intentional interaction within the educational environment. Educational technology has supported this pedagogical shift by expanding opportunities to use digital resources in teaching and learning. The Organization for Economic Co-operation and Development (OECD, 2023) concluded that, when integrated within effective pedagogical practices, digital technologies can enhance educator effectiveness by facilitating personalized learning, providing timely feedback to students, encouraging collaborative inquiry, and

supporting ongoing assessment. Educational technologies are regarded not as replacements for educators, but as instruments that complement and augment classroom instruction, thereby enriching the learners' educational experiences.

E-tutoring, which involves the utilization of digital technologies for both synchronous and asynchronous interactions between teachers and learners, is an increasingly examined method within scholarly literature, enhanced by technological advancements. Contemporary e-tutoring extends beyond basic online communication, encompassing learning management systems, video conferencing tools, interactive multimedia, mobile learning applications, intelligent tutoring systems, and artificial intelligence-integrated learning environments. These technologies enable students to learn at their own pace, access a diverse array of resources, receive immediate feedback, and participate in collaborative learning beyond traditional classroom settings.

Recent research shows that using technology for language learning can be a wonderful support, making students more engaged and motivated and improving their academic results when it fits well with teaching approaches. Klimova et al. (2023), in a thorough review of new technologies in university English classes, found that digital tools can create real-life language experiences and inspire students across different educational settings. However, they also pointed out that success really depends on how well these technologies are incorporated into current teaching methods, rather than just the technology alone. In the Indonesian EFL context, Zaki et al. (2024) similarly reported that most senior high school students held favourable attitudes towards ICT-supported English learning and expected teachers to use it more frequently, although the teacher involved felt that ICT support in EFL classes remained insufficient

Furthermore, Weng et al. (2024) demonstrated that integrating technological advancements in K–12 English language education considerably enhances language proficiency and student engagement. The review emphasized the efficacy of immersive and interactive tools, especially when combined with structured teacher guidance, in attaining improved vocabulary and comprehension outcomes.

Similarly, Pitriyah & Sulistyaningrum (2024) found that technology use in primary education positively influences students' motivation, participation, and achievement in English language learning. However, they advised that younger learners require greater scaffolding and teacher presence to ensure the effectiveness of technology-supported teaching methods.

E-tutoring is an exciting and innovative approach that allows teachers and students to connect and learn together in both real-time and flexible ways through LMS, video conferencing, multimedia, and mobile learning tools. Unlike traditional classroom settings, e-tutoring offers a wonderful opportunity to make learning more accessible and personalized, giving students the chance to receive tailored feedback and collaborate with peers in a supportive environment. Recent studies show that the success of technology-enhanced learning depends not only on having the right digital tools but also on how well these tools are integrated into teaching practices and the quality of interactions between teachers and students. When used thoughtfully, technology can promote meaningful communication, teamwork, and a strong sense of presence in online learning (Martin & Borup, 2022). Plus, positive and engaging social environments online help motivate learners and keep them actively involved (Goagoses et al., 2024).

In the field of English language learning, e-tutoring offers opportunities to pupils to strengthen their reading, vocabulary, writing and communication skills by engaging in interactive learning activities, using information and communication technology, and through ongoing formative assessment. The types of learning spaces in this instance facilitate learners' autonomy and allow for teacher monitoring of learning and timely feedback. Recent systematic reviews have established that technology-supported instruction is effective for language learning when coupled with sound pedagogical practices and active language learner involvement. For instance, Akpen et al. (2024) found that high-quality online learning spaces can enhance student learning and engagement, but this depends on the quality of the learning and support provided to students. The rise of e-Tutoring has also changed the role of the teacher from a transmitter of knowledge to a facilitator of learning, responsible for

creating engaging learning activities, supporting students' learning, and delivering personalized feedback.

Nevertheless, effective teaching significantly contributes to successful digital learning, as educators' pedagogical skills and competencies are vital for meaningful learning and the effective utilization of technology (Martin & Borup, 2022). Direct instruction tends to be more prevalent in primary education settings, where the instructor explicates the content, demonstrates procedures, guides students through tasks, and offers feedback on errors. In language education contexts, where interaction, collaboration, and self-regulated learning are essential, exclusive reliance on teacher-centred approaches may diminish students' opportunities for interaction and collaboration, thereby limiting prospects for self-regulated learning. Although the objectives of academic achievement in e-tutoring and direct instruction are aligned, the pedagogical orientations thereof differ considerably.

The paradigm of direct instruction emphasizes explicit teaching and the systematic transfer of knowledge. In contrast, the paradigm of e-tutoring is founded on interactive learning, cooperative knowledge construction, individual control of the learning process, and the perpetual availability of electronic learning tools. Preliminary evidence suggests that the effectiveness of either approach is contingent upon instructional quality, teacher competence, and contextual factors. However, empirical research examining the impact of e-tutoring compared to direct instruction on pupils' achievement in English Language within primary schools in Nigeria remains limited. This gap underscores the necessity for the current study.

Direct instruction itself possesses a well-established theoretical and empirical foundation that predates its utilization as a comparison condition in the current study. It is imperative to explicitly articulate this foundation to ensure that the direct instruction group in this study is recognized as a genuinely effective, evidence-based approach rather than a residual or unstructured control condition. Engelmann and Carnine (1982) formulated the Direct Instruction model based on the principle that meticulous sequencing of content, explicit modelling, and systematic guided practice can consistently yield learning gains independent of a learner's prior ability, provided the instructional design is sound. This methodology was validated through Project Follow Through, one of the most extensive

educational experiments conducted in the United States, in which Direct Instruction consistently surpassed various alternative instructional models on measures of basic skills, cognitive development, and affective outcomes. Subsequently, Rosenshine (2012) synthesised decades of process-product research into a set of instructional principles, including reviewing prior learning, presenting new material in small, manageable steps, guiding student practice, and offering frequent and immediate feedback—attributes characteristic of the direct instruction condition employed in this study. Comprehending direct instruction within this framework enhances the interpretive value of any observed differences between it and e-tutoring, as a significant advantage for e-tutoring would indicate superiority over a genuinely effective, pedagogically grounded alternative, rather than over a poorly defined or minimal comparison condition.

The present study draws on Constructivist Learning Theory, Connectivism, and Cognitive Load Theory to explain why learning outcomes obtained through e-tutoring are anticipated to be superior to those achieved through conventional direct instruction. These complementary perspectives provide a theoretical framework for understanding how students learn in technology-enhanced environments and the potential for improved academic results via e-tutoring compared with traditional face-to-face instruction. These theories emphasize the importance of active engagement, meaningful interaction, collaboration, appropriate instructional support, and effective management of learners' cognitive resources. Furthermore, they reject the notion of passive information reception as a prerequisite for successful learning (Piaget, 1952; Vygotsky, 1978; Siemens, 2005; Sweller, 1988).

Constructivist Learning Theory is among the cognitive constructivist theories proposed by Piaget (1952) and the social constructivist theory advanced by Vygotsky (1978). It asserts that learners construct knowledge based on their prior experiences and current knowledge frameworks. When learners are actively engaged in real-world learning activities, the learning process becomes more meaningful, especially when they collaborate with classmates, receive feedback, and promptly reflect on their learning experiences. Constructivism has been integrated into English language education as a methodology to develop students' abilities

in reading, writing, vocabulary, and communication through active interaction rather than rote memorization. Recent reviews of digital and hybrid learning environments have confirmed the effectiveness of constructivist approaches, which continue to be widely implemented. This is largely due to technology's capacity to facilitate meaningful knowledge construction, foster collaboration, and enhance learner engagement.

The pedagogical features of e-tutoring closely resemble those of constructivist approaches. E-tutoring increases pupils' responsibility for their learning by supporting educators in delivering personalized instructional support through interactive multimedia, collaborative learning activities, formative assessments, and ongoing feedback. Conversely, direct instruction offers systematic explanations and explicit directives. However, opportunities for learner interaction and collaborative knowledge construction may be comparatively limited. Consequently, constructivist theory holds substantial promise for the success of e-tutoring in English language education, as it promotes active engagement with educators, peers, and digital learning materials.

This study is also supported by the theory of Connectivism introduced by Siemens (2005), which defines learning within digitally connected environments. Connectivism serves as the theoretical framework asserting that knowledge is distributed across networks of individuals, digital technologies, and informational resources. Furthermore, learning is conceptualized as a process involving the creation, navigation, evaluation, and application of these networks. Consequently, learning increasingly extends beyond traditional classroom settings into engagements with the digital world, communities, and technology-enabled learning resources.

Connectivism has recently undergone numerous reviews, consistently demonstrating its significance as a learning paradigm within the contemporary digital environment. Notably, it fosters collaboration, autonomy, and knowledge construction within networks. From a connectivist perspective, e-tutoring provides students with continuous opportunities to communicate with their instructors, peers, and online learning resources beyond the traditional school setting. These interactions promote learner independence, facilitate collaborative knowledge development, and sustain engagement with educational activities.

Such characteristics are particularly vital for English language acquisition, as regular exposure to authentic language materials, constructive feedback, and ongoing communication significantly enhance language learning and practical language application.

The study also relies on Cognitive Load Theory (Sweller, 1988), which describes learning as constrained by the limited capacity of working memory. The theory suggests that instructional materials need to reduce unnecessary cognitive load and focus students' attention on essential cognitive processes. Logically arranged instructional materials, supported by appropriate and relevant multimedia, facilitate easier processing, retention, and application of information by learners. Recent reviews have also demonstrated that effective digital learning environments can promote learning through the mindful design of cognitive load, while simultaneously engaging and motivating learners.

In e-tutoring, well-designed multimedia materials, scaffolded learning, adaptive feedback, and interactive exercises serve to diminish extraneous cognitive load and facilitate meaningful learning. Cognitive Load Theory also cautions that technology does not inherently improve learning outcomes; poorly designed digital environments may overload the learner's working memory, consequently undermining the effectiveness of the learning process. Therefore, the educational advantage of e-tutoring resides not in the technology itself but in the instructional design. The overarching conceptual framework of this study is grounded in the following theories: Constructivist Learning Theory, Connectivism, and Cognitive Load Theory.

Constructivism characterizes learning as active engagement and meaningful interaction; Connectivism depicts learning as occurring within digitally connected environments; and Cognitive Load Theory pertains to effective instructional design that facilitates efficient knowledge acquisition. Together, these theories imply that e-tutoring is likely to enhance learner engagement, personalized support, collaborative learning, and achievement in English language within appropriate pedagogical and technological contexts. These theoretical frameworks underpin the comparison of the impact of e-tutoring and direct tutoring on the academic performance of primary school learners in English Language in Ondo State, Nigeria.

Recent empirical studies substantiate the educational potential of technology-enhanced English language instruction; however, they also reveal notable gaps within the existing literature. Recent systematic reviews indicate that digital learning environments, when combined with well-designed pedagogical strategies and effective teacher facilitation, can positively impact learners' motivation, engagement, language development, and academic achievement (Martin & Borup, 2022; OECD, 2023). Nonetheless, these reviews also identify considerable variability in learning outcomes across different studies, with varying degrees of effectiveness associated with technology-supported instruction. Such variability depends on factors beyond technology itself, including instructional quality, learner characteristics, and contextual conditions. Most existing evidence comes from other countries, predominantly higher education settings, thereby limiting its direct applicability to English Language Teaching in primary schools in Nigeria.

Despite the growing body of evidence supporting the integration of technology in language education, notable research gaps persist. Most prior studies focused on educational technology or online learning broadly, with a limited number focusing specifically on e-tutoring as a distinct instructional modality. Furthermore, there exists a paucity of studies that directly compare e-tutoring to traditional face-to-face tutoring through experimental or quasi-experimental designs involving primary school students in developing countries such as Nigeria. Additionally, contextual variables, including school type and location, have been insufficiently empirically examined, despite their potential impact on the efficacy of technological interventions in teaching.

Overall, the theoretical frameworks and recent empirical findings suggest that e-tutoring has the potential to enhance pupils' English language learning through active engagement, effective interaction, personalized feedback, collaborative knowledge construction and the management of cognitive resources. Nevertheless, the extent to which these theoretical benefits are realized within the context of Nigerian primary schools, as well as their relationship to other contextual factors such as school type and location, remains insufficiently understood. Instructional strategy is not the sole factor affecting outcomes;

school-related contextual factors also influence pupil performance and the efficacy of technologically supported learning.

Specifically, school type and location have been considered due to their impact on students' access to learning resources, quality of instruction, digital infrastructure, and supportive educational environments. While the educational aims of public and private institutions are similar, the execution and outcomes of innovative pedagogical models such as e-tutoring may differ owing to variations in funding, available resources, institutional backing, and technological readiness. Faremi et al. (2024) observed a significant disparity between public and private secondary schools in Southwestern Nigeria concerning students' academic outcomes, thereby suggesting that school type may influence the effectiveness of classroom interventions and serves as a crucial contextual factor in educational achievement.

The OECD (2023) also observed that the educational value of technology is associated with the quality of teaching and learning practices, as well as the robustness of school support systems. Another contextual factor that may influence pupils' learning outcomes is school location. Disparities exist between urban and rural schools in access to qualified teachers, digital infrastructure, internet connectivity, electricity provision, and instructional materials, particularly in low- and middle-income countries (LMICs). These disparities could impact the effective implementation of technology-supported teaching and learning strategies. Nonetheless, growing evidence suggests that the adverse effects of geographic location on learning outcomes may be significantly reduced when schools possess comparable instructional support and learning resources. For example, although urban schools tend to perform better than rural schools, Faremi et al. (2024) concluded that, after accounting for school characteristics, there was no significant difference between the two.

The Nigerian context provides additional specificity regarding how the type and location of schools might influence the effectiveness of e-tutoring. National-level evidence indicates that access to digital technology remains significantly unequal between urban and rural areas, with rural schools disproportionately impacted by unreliable electricity, limited internet connectivity, and insufficient digital devices. Olanrewaju, Adebayo, Omotosho, and Olajide (2021), in their investigation of digital disparities in rural secondary schools and

remote communities across six Nigerian states, identified socioeconomic status, poor connectivity, and unreliable power supply as the principal predictors of digital exclusion among students in these areas. Similar evidence from other developing countries also warns against presuming that technology-supported learning functions identically across diverse contexts. Khan, Hwang, Abbas, and Rehman (2018) demonstrated that mobile-technology interventions could reduce the achievement gap between urban and rural students in developing nations, provided that the technology aligns with locally feasible infrastructure and is supported by adequate teacher training, rather than presuming uniform efficacy across different settings. These findings imply that the efficacy of e-tutoring in this study—based on a PowerPoint presentation delivered within the classroom environment rather than on individual internet-enabled devices—may be less susceptible to infrastructural limitations typically linked to the urban-rural digital divide, compared to other forms of e-learning that demand higher bandwidth. This perspective offers a potential explanation, which will be revisited later in the Discussion, for the absence of a significant interaction between treatment and school location observed in this research.

Furthermore, UNICEF (2024) affirms that teachers' instructional capacity and professional development within the school environment can enhance learning outcomes across various educational contexts. In addition, factors such as the type and location of the school, learner characteristics, teacher competence, learning materials, and the time dedicated to effective teaching and learning may also influence pupils' academic performance in the English Language. Instructional strategy remains one of the most influential school-based factors, as it directly affects learners' engagement, participation, and opportunities for meaningful learning. Current evidence also indicates that the use of digital technologies to augment learning outcomes depends on their integration within sound pedagogic practices rather than serving as a substitute. Although an increasing body of research has examined technology-enhanced learning, notable gaps in empirical studies persist.

Existing research has predominantly concentrated on digital learning in a broad sense, rather than explicitly on e-tutoring as an instructional method. Additionally, few studies have directly compared e-tutoring with traditional instruction among primary school children.

Moreover, the limited findings from previous investigations regarding the moderating influence of school type and location on the effectiveness of these pedagogical approaches within primary schools in Nigeria are noteworthy. Consequently, it remains unclear whether the anticipated theoretical benefits of e-tutoring, such as improved academic outcomes over conventional tutoring are realized in practice. The current study aims to examine the comparative effects of e-tutoring and direct instruction on the academic performance of primary school pupils in English Language in Ondo State, Nigeria, addressing notable gaps in the literature, namely, theoretical, empirical, and contextual.

The study aimed to compare the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State. Specifically, the objectives of the study were to:

1. What is the relative effect of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State?
2. What is the difference in the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State based on school type?
3. What is the difference in the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State based on school location?

In accordance with the specific objectives of the study, the following hypotheses were formulated and empirically tested at a significance level of 0.05.

1. $H_0$1= There is no significant difference in the relative effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State.
2. $H_0$2= There is no significant difference in the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in the State based on school type.
3. $H_0$3= There is no significant difference in the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in the State based on school location.

Methods

The study employed the non-equivalent pre-test-post-test control group quasi-experimental research design. The population comprised primary school pupils in Ondo State. The sample consisted of primary four pupils in intact classes. Four public schools (two urban and two rural) and four private schools (two urban and two rural) were selected from the State using a stratified random sampling technique with school location and school type as stratification criteria. From each of the eight schools, one intact Primary Four class was selected through simple random sampling. All pupils within these classes were included, yielding a total sample size of 305 pupils. The decision to use intact classes was based on the suitability for the quasi-experimental design, and the sample size was determined by the number of pupils in the selected classes, rather than prior statistical estimation. Simple random sampling was employed to assign the eight schools to either the experimental or control groups. Each combination of school type (public and private) and school location (urban and rural) was represented by one experimental group and one control group. The experimental groups received instruction via the e-tutoring approach, whereas the control groups were taught through direct instruction.

The intervention was executed by trained research assistants employing standardised instructional guides tailored to each specific condition. The researcher supervised the implementation of the lessons and observed the research assistants during the intervention to ensure strict adherence to the instructional procedures and lesson guides pertinent to each treatment condition, thereby maintaining treatment fidelity. Given that a single research assistant assigned each intact class its condition, individual differences among the research assistants may confound the effects attributable to the instructional method. This limitation is acknowledged as common in classroom-based quasi-experimental designs utilising intact groups and is further addressed in the Discussion.

The instructional package consisted of four passages of English Language comprehension, designed to conform to the approved English Language curriculum for Primary Four. In the experimental group, pupils were provided with an e-tutoring intervention developed by the researcher, which was projected onto the classroom wall during

instructional sessions, utilizing Microsoft PowerPoint. This PowerPoint package integrated text, images, animations, interactive questions, and immediate feedback to facilitate active student engagement and to enhance their vocabulary, reading, and comprehension skills. The intervention was delivered synchronously by trained research assistants. Conversely, the control group received the same comprehension passages and instructions for understanding, delivered through direct teaching. The educational content and learning outcomes were identical for both groups; the only difference lay in the mode of instructional delivery.

The data for the study were obtained using a single instrument, the English Language Academic Performance Test (ELAPT). Four qualified primary school teachers and experts in Curriculum, Instruction and Language Education validated the ELAPT concerning its face and content validity. Based on their feedback, several items were modified prior to pilot testing the instrument on 40 Primary Four pupils who did not participate in the main study, selected from schools outside the study area but sharing similar characteristics with the study schools. The difficulty indices for the test items ranged from 0.38 to 0.42, indicating items of moderate difficulty. The reliability of the ELAPT was assessed through test–retest reliability: the instrument was administered twice to the 40 non-participating pupils, and the scores from both administrations were correlated using the Pearson Product Moment correlation coefficient. The resulting reliability coefficient was 0.78, demonstrating that the instrument was dependable and suitable for this study. The ELAPT was administered as both the pre-test and post-test. The intervention spanned six weeks. Data were analysed using a 2 × 2 × 2 factorial Analysis of Covariance (ANCOVA), with pre-test scores serving as the covariate to account for initial differences among the groups.

The purpose and procedures of the study were explained to school authorities and classroom teachers prior to the intervention, and the head teachers of all participating schools granted permission for the study to be conducted. Written informed consent was obtained from the parents/guardians of participating pupils prior to data collection, using a structured consent form which confirmed that participation was voluntary, that withdrawal was possible at any time without penalty, and that a copy of the consent form would be provided to each

participant. No personally identifying data were collected, and the confidentiality and anonymity of all pupils involved were maintained throughout; data collected were used strictly for research purposes.

Results

Hypothesis One

There is no significant difference in the relative effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in Ondo State.

To examine this hypothesis, the Analysis of Covariance (ANCOVA) was employed to account for potential differences in the students' pre-test scores. The results are presented in Tables 1 and 2.

Table 1: 2×2×2 Factorial Analysis of Covariance of the Effects of Treatment, School Type and School Location on Primary School Pupils' Academic Performance in English Language

Table 1.1

Between-Subjects Factors

		Value Label	N
School Type	1	Government	198
	2	Private Owned	107
Location of School	1	Rural	138
	2	Urban	167
Experimental & Control Groups	1	E-tutoring	158
	2	Direct Instruction	147

Table 1.2

Descriptive Statistics (Dependent Variable: Post-test Scores)

School Type	Location	Group	Mean	SD	N
Government	Rural	E-tutoring	41.47	4.943	47
		Direct Instruction	35.43	8.751	44
		Total	38.55	7.634	91

	Urban	E-tutoring	40.09	5.213	56
		Direct Instruction	33.69	7.257	51
		Total	37.04	7.019	107
	Total	E-tutoring	40.72	5.113	103
		Direct Instruction	34.49	7.988	95
		Total	37.73	7.328	198
Private Owned	Rural	E-tutoring	40.79	4.433	24
		Direct Instruction	37.43	8.184	23
		Total	39.15	6.689	47
	Urban	E-tutoring	41.90	5.394	31
		Direct Instruction	36.31	7.649	29
		Total	39.20	7.106	60
	Total	E-tutoring	41.42	4.984	55
		Direct Instruction	36.81	7.832	52
		Total	39.18	6.894	107
Total	Rural	E-tutoring	41.24	4.755	71
		Direct Instruction	36.12	8.552	67
		Total	38.75	7.306	138
	Urban	E-tutoring	40.74	5.319	87
		Direct Instruction	34.64	7.462	80
		Total	37.81	7.106	167
	Total	E-tutoring	40.96	5.064	158
		Direct Instruction	35.31	7.984	147
		Total	38.24	7.200	305

Table 1.3

Tests of Between-Subjects Effects

Source	Type II SS	df	Mean Square	F	Sig.	Partial η^2
Corrected Model	10420.423	8	1302.553	72.186	<.001	.661
Intercept	10200.802	1	10200.802	565.321	<.001	.656
Pretest Scores	7639.454	1	7639.454	423.373	<.001	.589
School Type	70.991	1	70.991	3.934	.048	.013
School Location	24.226	1	24.226	1.343	.248	.005
Treatment	2963.362	1	2963.362	164.227	<.001	.357

School Type × School Location	68.694	1	68.694	3.807	.052	.013
School Type × Treatment	97.198	1	97.198	5.387	.021	.018
School Location × Treatment	31.141	1	31.141	1.726	.190	.006
School Type × Location × Treatment	21.511	1	21.511	1.192	.276	.004
Error	5341.105	296	18.044			
Total	461747.000	305				
Corrected Total	15761.528	304				

a. R Squared = .661 (Adjusted R Squared = .652)

The sixth line of Table 1 examines the primary effect of treatment modalities (in particular, E-tutoring and Direct Instruction groups) on pupils' post-test performance in English. This main effect is statistically significant, as indicated by $F(1,296) = 164.227$, $p < .001$, with a partial η^2 of .357. The descriptive statistics presented in Table 1 reveal that students receiving E-tutoring achieved a higher mean score (mean = 41.185) compared to those receiving Direct Instruction (mean = 35.375). The partial eta squared value demonstrates that the treatment accounted for 35.7% of the variance in pupils' post-test scores, which, according to Cohen's benchmarks (small ≈ .01, medium ≈ .06, large ≈ .14), signifies a large effect size. Consequently, the null hypothesis, asserting that there is no significant difference between the effects of E-tutoring and Direct Instruction on primary school pupils' academic performance in English Language, is rejected.

Table 2

Descriptive Statistics of the Mean Scores of the Experimental and Control Groups

Group	Mean	Std. Error	95% CI Lower	95% CI Upper
E-tutoring	41.185	.357	40.482	41.888
Direct Instruction	35.375	.369	34.649	36.101

a. Covariates appearing in the model are evaluated at the following value: Pretest Scores of Candidates = 31.03.

Table 3

Pairwise Comparison of Differences in the Means of the E-tutoring and the Direct Instruction Groups

(I) Group	(J) Group	Mean Diff (I-J)	Std. Error	Sig.	CI Lower	CI Upper
E-tutoring	Direct Instruction	5.810*	.513	.001	4.799	6.820
Direct Instruction	E-tutoring	-5.810*	.513	.001	-6.820	-4.799

** The mean difference is significant at the .05 level after adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustment).*

The pairwise comparison of the treatment groups is shown in Table 3. The results show that pupils who were taught with the e-tutoring approach scored significantly higher than those who were taught with the direct instruction approach (mean difference = 5.810, SE = 0.513, $p < .001$, 95% CI [4.799, 6.820]). Since there were only two instructional groups (e-tutoring and direct instruction), there was only one pairwise comparison; the inference obtained from the Least Significant Difference (LSD) procedure is therefore identical to that which would be obtained from a multiplicity-adjusted procedure such as the Bonferroni correction, so no adjustment was required.

Hypothesis Two

There is no significant difference in the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in the State based on school type.

To test this hypothesis, the interaction of treatment and school type on the post-test academic performance of the pupils, as depicted by the eighth line of the Analysis of Covariance (Table 1), was used.

Noting that effectiveness varies by school type but not location can reassure educators and curriculum planners about targeted support needs.

Table 4

Descriptive Statistics of the Interaction of School Type and Treatment on Academic Performance

School Type	Group	Mean	Std. Error	CI Lower	CI Upper
Government	E-tutoring	41.338	.421	40.509	42.166
	Direct Instruction	34.283	.437	33.423	35.144
Private Owned	E-tutoring	41.032	.578	39.895	42.169
	Direct Instruction	36.466	.593	35.299	37.634

Table 4 shows that irrespective of school type, pupils in the E-tutoring group performed better than those in the Direct Instruction group. Only a marginal difference exists between the academic performance of pupils in government-owned and privately owned schools assigned to the E-tutoring group (mean difference = 0.306) in favour of the government-owned schools. The difference between the performance of pupils in government-owned and privately owned schools assigned to the Direct Instruction group is larger than that reported for the E-tutoring group (mean difference = 2.183) in favour of the privately owned schools.

Hypothesis Three

There is no significant difference in the effects of e-tutoring and direct instruction on primary school pupils' academic performance in English Language in the State based on school location.

To test this hypothesis, the interaction between treatment and school location on pupils' post-test academic performance was examined, as shown by the ninth line of the Analysis of Covariance (Table 1).

Results indicated no significant interaction between the treatment the pupils received and the location of their school ($F(1,296) = 1.726$, $p = .190$, partial $\eta^2 = .006$). Hence, no significant difference exists in the effects of e-tutoring and direct instruction on the academic performance of pupils based on school location. The descriptive statistics are shown in Table 5.

Table 5

Descriptive Statistics of the Interaction of School Location and Treatment on Academic Performance

Location	Group	Mean	Std. Error	CI Lower	CI Upper
Rural	E-tutoring	40.923	.533	39.874	41.972
	Direct Instruction	35.924	.547	34.848	37.001
Urban	E-tutoring	41.447	.476	40.510	42.384
	Direct Instruction	34.825	.494	33.853	35.798

Table 5 shows that irrespective of school location, pupils in the E-tutoring group (mean scores of 40.923 and 41.447 for rural and urban locations, respectively) performed better than those in the Direct Instruction group (mean scores of 35.924 and 34.825 for rural and urban locations, respectively). Only a marginal difference exists between the performance of pupils in rural and urban schools assigned to the E-tutoring group (mean difference = 0.524) in favour of urban schools, and the difference for the Direct Instruction group is similarly minimal (mean difference = 1.099) in favour of rural schools. This interaction is not significant at the .05 level, consistent with Table 1.

Discussion

The results show that pupils' performance under the e-tutoring approach was higher than under the direct instruction approach, illustrating the effectiveness of e-tutoring in enhancing the academic performance of primary school pupils in English Language in the schools involved. This advantage could be explained by the interactive and learner-centred nature of e-tutoring, which provides pupils with opportunities to participate, receive immediate feedback, repeat instructions, learn in groups and access digital learning resources, rather than relying primarily on the teacher's role of explaining and demonstrating. These instructional elements align with the principles of Constructivist Learning Theory, which centers on the active, meaningful and ongoing generation of knowledge by learners. Likewise, Connectivism suggests that learning improves when learners are exposed to a variety of information and digital learning networks, and Cognitive Load Theory holds that instructional

design which minimizes unhelpful cognitive load can improve learning. All three theoretical strands are consistent with the design of the e-tutoring intervention used in this study.

The results also align with recent empirical research showing the effectiveness of technology-enhanced instruction when embedded in an effective pedagogical support system, in terms of engagement, motivation, and achievement (OECD, 2023; UNESCO, 2023). In the same vein, UNICEF (2024) noted that the educational potential of digital technologies can be realized through good teaching practices and adequate instructional support. The present findings suggest, therefore, that effective use of technology enables pupils to become active learners and engage with English Language learning interactively, supplementing rather than replacing effective teaching.

The significant interaction between instructional strategy and school type points to a difference in the effectiveness of e-tutoring depending on the school environment. This could be attributed to differences in the availability of digital facilities, instructional materials, institutional support, and technological competency of teachers between public and private schools. Private schools in Nigeria typically operate with smaller class sizes, more discretionary funding for instructional materials, and greater latitude to adopt supplementary technology-based resources, all of which could plausibly amplify or dampen the relative benefit of a technology-mediated intervention such as e-tutoring depending on how it interacts with existing classroom practice. This finding supports Faremi et al. (2024), who found significant differences in learning outcomes between public and private secondary schools in Southwestern Nigeria, indicating that school type remains an important contextual factor in learning outcomes. By contrast, the absence of a significant interaction between instructional strategy and school location suggests that e-tutoring was effective for pupils whether their school was in an urban or rural setting, implying that with adequate instructional assistance and learning materials, e-tutoring can enhance learning outcomes across geographical contexts. This is consistent with Faremi et al. (2024), who found no significant difference in learning outcomes between urban and rural schools once relevant school characteristics were controlled for, and with UNICEF (2024), who noted that adequate school support combined

with strengthened teacher instructional capacity can improve learning outcomes across educational settings.

The non-significant location effect is worth interpreting against the broader literature on Nigeria's urban-rural digital divide, which typically finds pronounced disparities in digital learning outcomes tied to infrastructure and connectivity (Khan et al., 2018; Olanrewaju et al., 2021). One plausible explanation for the divergence between this study's findings and that broader pattern is that the e-tutoring intervention was deliberately designed around infrastructure realistic for most Nigerian primary schools: a projector displaying PowerPoint-based multimedia content delivered by a trained research assistant, rather than individual pupil devices requiring sustained internet connectivity. This design choice may have insulated the intervention from the electricity and connectivity constraints that typically drive rural disadvantage in more internet-dependent e-learning models. If so, the finding carries a practical implication beyond the immediate results: policymakers and curriculum planners seeking to scale e-tutoring in similarly resourced contexts may achieve more equitable outcomes across urban and rural schools by prioritizing low-bandwidth, projector-based or device-light delivery models over approaches that assume reliable individual internet access, at least until broader infrastructural gaps are addressed.

Overall, the results indicate that e-tutoring is more effective than direct instruction in producing achievement gains for primary school pupils in English Language, and that this effectiveness depends not only on the instructional strategy itself but also on the school environment's capacity to support technology use. The results of this study must be interpreted in light of its design: it used intact classes rather than fully randomized individual assignment, was conducted over six weeks, and focused specifically on academic performance in English Language. Because each intact class was taught by a single research assistant per condition, the effect of instructional method cannot be fully disentangled from possible research-assistant effects, notwithstanding the fidelity monitoring conducted during the study; this is a limitation inherent to classroom-based quasi-experimental designs using intact groups. The study is further limited by its focus on a single language skill domain measured through one instrument, which means the findings speak to comprehension-based academic

performance rather than to oral communication or writing outcomes specifically; and by the absence of a delayed post-test, which means the durability of the observed gains beyond the immediate six-week intervention period remains untested. Future research extending the intervention period, incorporating a retention or follow-up assessment, covering additional language skills, employing multiple instructors per condition, and drawing on broader educational settings would help to establish the durability and generalizability of these findings.

Conclusion

The findings of this study concluded that e-tutoring was more effective than direct instruction in enhancing pupils' academic performance in English Language, regardless of school type or location. It is therefore recommended that English Language tutors be trained in e-tutoring during their internship, that curriculum planners provide adequate supportive learning aids within e-tutoring activities, and that government authorities and school management ensure the provision of necessary e-tutoring facilities and reliable electricity supply in schools. Curriculum planning bodies such as UBEC and NERDC should also prioritise offline-capable e-tutoring packages for rural and under-resourced schools, while public schools in particular should receive targeted institutional support to narrow the performance gap with private schools.

However, the findings of this study should be interpreted with caution, as several limitations were identified. The study was restricted to a specific geographic context, focused solely on English Language academic performance over a fixed period, and employed a projector-based e-tutoring model that may not fully represent other forms of e-tutoring delivery. These constraints may limit the generalisability of the findings to broader educational settings.

Future research should therefore replicate this study across wider and more diverse contexts to validate its findings. Longitudinal studies are encouraged to examine whether the observed performance gains are sustained over time, and subsequent investigations should explore other learning outcomes such as pupils' motivation and engagement. Comparative

studies examining different e-tutoring modalities and delivery formats would also contribute meaningfully to a more comprehensive understanding of e-tutoring effectiveness.

Acknowledgments

The authors wish to express their sincere gratitude to the head teachers of all participating schools for granting permission to conduct this study within their institutions. Appreciation is also extended to the parents and guardians of the participating pupils for their cooperation in providing written informed consent, which made the ethical conduct of this research possible. The voluntary participation of all pupils involved is likewise gratefully acknowledged. The authors further affirm that no personally identifiable information was collected at any stage of the study, and that the confidentiality and anonymity of all participants were maintained throughout the research process.

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