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RESEARCH ARTICLE

An Investigation into AI-Assisted Aspect-Based and Integrated English Teaching Approaches Using ADLL and CPCT Theories

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Abstract

This study investigated the comparative effectiveness of AI-assisted aspect-based and integrated English teaching approaches, grounded in Aspectual Diversification in Language Learning Theory (ADLL) and Curriculum Practice Convergence Theory (CPCT). It aimed to determine their effects on students' proficiency, engagement, and curriculum-practice alignment. A quasi-experimental design was employed. The population comprised 400 SS2 students from two secondary schools in Akoko South East, Ondo State, Nigeria, with a sample of 120 students selected using stratified random sampling. A panel of three expert language educators and curriculum measurement specialists was constituted from Landmark College to ensure construct and content validity. The ELAT essay and writing sections were scored using a standardized, analytical 100-point rubric spanning four core criteria (25 points each): Grammar and Expression, Content Development, Organization of Ideas, and Critical Writing. Data were collected through pre-tests, post-tests. AI-generated analytics, classroom observations, and questionnaires, were analyzed using descriptive and inferential statistics. Findings revealed that AI-assisted aspect-based instruction significantly improved discrete language skills, particularly grammar and vocabulary, while AI-assisted integrated instruction enhanced overall communicative competence and contextual language use. The study concluded that a hybrid AI-assisted instructional model offers the most effective approach to English language teaching.

Keywords: AI-Assisted Instruction; Aspect-Based Teaching; Integrated Teaching; English Language Learning; ADLL Theory; CPCT Theory.

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1. INTRODUCTION

The increasing integration of artificial intelligence (AI) into educational systems has significantly transformed teaching and learning processes, particularly in language education. AI-driven platforms now enable adaptive learning, personalized instruction, and real-time feedback, thereby redefining traditional pedagogical approaches. Despite these advancements, a critical question persists within English language teaching: should instruction prioritize aspect-based learning, which focuses on discrete linguistic components such as grammar and vocabulary, or adopt an integrated approach that simultaneously develops all language skills within communicative contexts? This debate is particularly relevant in secondary education, where learners are expected to achieve both accuracy in language forms and fluency in communication. Aspect-based instruction has long been associated with precision, depth of understanding, and mastery of specific skills, yet it often risks fragmentation of knowledge. Conversely, integrated teaching promotes holistic language use and communicative competence, but may lack the focused reinforcement necessary for mastering individual language components [13]. The emergence of AI offers a unique opportunity to bridge this pedagogical divide, enabling simultaneous implementation of both approaches through adaptive and data-driven systems. There is a noticeable gap in research that systematically compares aspect-based and integrated approaches using robust experimental designs and theoretical grounding. This gap is significant, given the increasing reliance on technology in education and the need for evidence-based strategies to improve learning outcomes. Against this backdrop, this study investigates the comparative effectiveness of AI-assisted aspect-based and integrated English teaching approaches among secondary school students in Akoko South East, Ondo State, Nigeria. Using a quasi-experimental design and leveraging AI-based learning tools, the study seeks to provide empirical evidence on instructional effectiveness, learner engagement, and curriculum alignment. In doing so, it contributes to the growing body of knowledge on technology-enhanced language learning and offers practical insights for educators, curriculum developers, and policymakers. The remainder of this manuscript is organized as follows: Section 2 reviews the existing literature and establishes the theoretical framework guiding this study. Section 3 outlines the statement of the problem, research objectives, questions, hypotheses, and scope. Section 4 describes the quasi-experimental research methodology, including the

population, sampling techniques, instruments, and data analysis procedures. Section 5 presents the empirical results and a detailed discussion of the findings, followed by the pedagogical implications, overall conclusions, and recommendations in Sections 6 and 7. Ultimately, this study positions AI not merely as a technological innovation but as a pedagogical catalyst capable of transforming English language instruction.

2. LITERATURE REVIEW

Advances in artificial intelligence (AI) have generated transformative potentials in language instruction, reshaping pedagogical paradigms and challenging longstanding debates about effective approaches to teaching English as a second or foreign language. Central to these debates is the question of whether aspect-based instruction which isolates and intensively targets discrete language skills yields better outcomes than integrated instruction, which fosters holistic language use across communicative contexts [13]. Situated within this discourse, the present study investigates the comparative effectiveness of AI-assisted aspect-based and integrated English teaching, framed by two theoretical perspectives: Aspectual Diversification in Language Learning Theory (ADLL) and Curriculum Practice Convergence Theory (CPCT). The literature examined synthesizes and illuminates how AI facilitates these instructional approaches and impacts learners' performance in four critical dimensions: grammar and expression, content development, organization of ideas, and critical writing.

2.1 *AI-Assisted Language Learning: A Global Empirical Landscape*

Contemporary research increasingly recognizes AI as a powerful instructional tool in language education. AI's capacity for adaptive learning paths, automated feedback, real-time analytics, and personalized scaffolding positions it as an agent of instructional transformation. In Computers & Education, [4] reported that AI-based grammar modules led to significant improvements in grammatical accuracy for English learners, highlighting how adaptive corrective feedback accelerates rule internalization. Similarly, [8] found that AI-mediated corrective feedback enhanced syntactic competency among secondary learners, yielding higher post-test scores than traditional instruction. Beyond accuracy, AI technologies facilitate engagement and autonomy. [19] observed that AI supports in writing environments not only improved learners' text quality but also sustained motivation over time. AI chatbots and interactive interfaces have likewise been shown to increase learner participation and task persistence [7]. These studies collectively suggest that AI is not merely a technological add-on but a substantive academic mediator capable of enriching learning processes across both aspect-based and integrated instructions.

2.2 *Aspect-Based Instruction and Grammar and Expression*

The domain of grammar and expression represents one of the most empirically supported areas for aspect-based instruction enhanced by AI. Aspect-based instruction aligns tightly with ADLL's emphasis on targeted skill development. Empirical evidence confirms that when learners engage with AI-assisted grammar modules, error detection, correction, and retention improve markedly. [8] found that learners using adaptive AI grammar drills outperformed peers in syntactic accuracy, and [14] documented similar gains among Nigerian secondary learners exposed to AI-mediated grammar tutorials. AI's advantage in this domain lies in its ability to provide immediate, context-specific feedback a critical factor for accurate language production [15]. Unlike traditional classroom feedback, which is often delayed and generalized, AI systems deliver precise corrections as learners compose or select language structures.

2.3 *Integrated Instruction and Communicative Competence*

In contrast to the segmented focus of aspect-based approaches, integrated instruction situates language learning within broader communicative contexts, echoing the principles of CPCT, which advocates for the alignment of curriculum design and actual practice. Integrated instruction immerses learners in tasks that require simultaneous engagement with multiple language skills: reading, writing, speaking, listening within contextually meaningful activities. Researchers such as [10] found that AI-enabled integrated writing tasks improved not only linguistic accuracy but also rhetorical development and contextual appropriateness. Their study demonstrated that learners receiving iterative AI prompts and feedback produced essays with greater depth and coherence than learners in form-focused environments. In Journal of Computer Assisted Learning, [20] reported that learners engaged in AI-supported integrated activities exhibited higher engagement and better critical thinking skills compared to peers receiving traditional instruction. The success of integrated instruction in promoting communicative competence is rooted in its ability to contextualize language. CPCT underscores that authentic practice where tasks mirror real-world communication demands facilitates deeper internalization of skills. AI amplifies this effect by offering dynamic task sequencing, contextual prompts, and multimodal interaction, thereby strengthening learners' capacity to use language meaningfully across contexts [15].

2.4 *Content Development in AI-Assisted Learning*

A major advantage of integrated approaches, particularly when AI-assisted, is their impact on content development, defined as the ability to generate, expand, and sustain meaningful ideas in written or spoken discourse. AI's role in this domain is increasingly documented. [22] reported that learners using AI-assisted writing systems produced richer, more elaborated text compared to those in traditional classrooms. AI systems guided learners through idea generation, semantic expansion, and organizational prompts, enabling deeper exploration of topics. Similarly, [16] found that AI platforms improved learners' elaborative competencies, assisting novices in developing more complex argumentation structures. These gains reflect the cognitive engagement fostered by integrated tasks, where learners interact with content, context, and communicative

purpose. Recent research emphasizes that content development transcends mere linguistic correctness; it involves reflective thinking, semantic elaboration, and strategic idea expansion. AI tools, by offering thematic scaffolds and feedback loops, bridge the gap between idea conception and expression. CPCT contextualizes this by asserting that content development flourishes when curriculum objectives align with practical task execution, supported by adaptive technologies.

2.5 *Organization of Ideas and Discourse Coherence*

Organization of ideas the logical sequencing and structural clarity of discourse is another critical dimension where integrated instruction shows strong empirical support. Research indicates that learners benefit from AI-mediated feedback systems that focus on discourse-level features such as transitions, flow, and structural coherence. For instance, [5] found that automated evaluation systems improved learners' ability to organize ideas coherently by providing real-time analysis of text structure and cohesion. [18] demonstrated that Nigerian learners using AI writing platforms exhibited significant gains in essay organization, particularly in paragraph framing and connective clarity. These structural improvements suggest that learners internalize not only linguistic forms but also discourse norms, enabling clearer and more effective communication. CPCT frames this outcome as a function of contextualized practice; tasks that reflect authentic communicative demands require learners to synthesize information, sequence ideas logically, and maintain thematic unity skills that are best developed through meaningful interactions rather than isolated drills.

2.6 *Synthesis: Toward a Hybrid AI-Assisted Model*

The empirical evidence reviewed in this section suggests that both aspect-based and integrated AI-assisted instructional approaches have distinct strengths. AI-assisted aspect-based instruction excels in enhancing grammar accuracy and expression, consistent with ADLL's emphasis on targeted, focused skill development. In contrast, AI-assisted integrated instruction is more effective in fostering content development, organization of ideas, and critical writing, aligning with CPCT's advocacy for context-rich, communicative practice. Importantly, recent research increasingly supports a hybrid instructional model that combines the strengths of both approaches. For example, [1] argued that AI enables educators to blend form-focused practice with integrated communicative tasks, tapping into both precision and fluency development. Similarly, [17] have emphasized the instructive necessity of balancing discrete skill instruction with holistic communication practice. A hybrid model would implement aspectual modules to establish foundational accuracy, followed by integrated, task-based AI activities that contextualize those skills within meaningful communicative tasks. AI's adaptive capabilities make such a model pedagogically feasible, offering personalized feedback, real-time analytics, and task sequencing that respond to individual learner profiles.

3. THEORETICAL FRAMEWORK

The theoretical foundation of this study is grounded in two complementary frameworks proposed by Philip Abayomi Olorunfemi and Mustapha Bayaro cited in [13]: Curriculum Practice Convergence Theory (CPCT) and Aspectual Diversification in Language Learning Theory (ADLL). These theories provide a robust lens through which to examine the effectiveness of AI-assisted aspect-based and integrated English teaching approaches. They allow for an in-depth understanding of how discrete linguistic skills and integrated communicative competence can be developed simultaneously, providing a coherent rationale for evaluating learner performance in grammar and expression, content development, organization of ideas, and critical writing. Curriculum Practice Convergence Theory (CPCT) emphasizes the alignment between curriculum design and classroom practice. According to [13], effective learning occurs at the intersection of what the curriculum intends learners to achieve and the actual instructional strategies employed to realize these objectives. In the context of language teaching, CPCT posits that learners acquire meaningful competence when classroom tasks mirror the cognitive, social, and communicative demands outlined in the curriculum. The theory draws on constructivist and sociocultural principles, advocating that learning is optimized when students actively engage with tasks that are authentic, contextualized, and integrative. Within an AI-assisted instructional environment, CPCT explains how technology can operationalize curriculum intentions by providing dynamic, context-rich, and personalized learning experiences. For instance, AI-powered writing platforms can offer learners scaffolded prompts, adaptive sequencing, and real-time feedback, ensuring that practice aligns with both curriculum goals and students' developmental needs.

Empirically, [4] found that AI-facilitated integrated writing tasks significantly improved students' rhetorical development, coherence, and critical reasoning, demonstrating the practical relevance of aligning instructional design with curriculum expectations. Similarly, [19] reported that AI-supported integrated activities enhanced learner engagement and promoted higher-order thinking skills, highlighting the capacity of CPCT to inform pedagogically meaningful integration of technology in language instruction. Complementing CPCT, Aspectual Diversification in Language Learning Theory (ADLL) focuses on the targeted development of discrete language skills. ADLL asserts that linguistic competence is optimized when learners engage intensively with individual aspects of language such as grammar, vocabulary, sentence structure, and syntax through structured, diversified practice. This theory foregrounds the cognitive principle that mastery of specific linguistic components requires focused attention and repeated engagement. In AI-assisted classrooms, ADLL is operationalized through adaptive micro-learning modules, grammar drills, and vocabulary exercises that provide immediate feedback. Studies conducted in various contexts demonstrate the effectiveness of this approach. For example, [8] reported that AI-assisted grammar modules significantly improved EFL learners' syntactic accuracy, while [14] documented improved grammatical precision among Nigerian secondary school learners using AI-mediated grammar tutorials.

3.1 *Statement of the Problem*

English language proficiency remains a critical challenge in Nigerian secondary schools, particularly in the development of learners' grammar and expression, content development, organization of ideas, and critical writing skills. Traditional teaching approaches often focus on either integrated or aspect-based methods independently, which limits learners' ability to master discrete linguistic elements while applying them effectively in holistic, communicative tasks. Despite the rapid integration of artificial intelligence (AI) tools in language instruction, there is insufficient empirical evidence on how AI can simultaneously enhance both aspect-based and integrated learning approaches. This gap is particularly evident in the Nigerian context, where secondary school learners frequently struggle with coherent writing, idea organization, and critical reasoning. Consequently, there is a pressing need to investigate the comparative effectiveness of AI-assisted aspect-based versus integrated English teaching approaches to enhance learners' language competence across multiple domains, guided by the Aspectual Diversification in Language Learning Theory (ADLL) and Curriculum Practice Convergence Theory (CPCT).

3.2 *Research Objectives*

The study seeks to achieve the following objectives:

i. To determine the effect of AI-assisted aspect-based and integrated teaching approaches on learners' grammar and expression.

ii. To assess the influence of AI-assisted aspect-based and integrated teaching approaches on learners' content development skills.

iii. To examine the impact of AI-assisted aspect-based and integrated teaching approaches on learners' organization of ideas in writing.

iv. To evaluate the effect of AI-assisted aspect-based and integrated teaching approaches on learners' critical writing ability.

v. To compare the overall effectiveness of aspect-based versus integrated AI-assisted English teaching on secondary school learners' performance across all four skill domains.

3.3 *Research Questions*

Aligned with the objectives, the study answered the following research questions:

i. What is the effect of AI-assisted aspect-based and integrated teaching approaches on learners' grammar and expression?

ii. How do AI-assisted aspect-based and integrated teaching approaches influence learners' content development skills?

iii. What is the impact of AI-assisted aspect-based and integrated teaching approaches on learners' organization of ideas in writing?

iv. To what extent do AI-assisted aspect-based and integrated teaching approaches affect learners' critical writing ability?

v. Which instructional approach: aspect-based or integrated is more effective in improving learners' overall English language performance across all four domains?

3.4 *Research Hypotheses*

The following null hypotheses were tested at a 0.05 level of significance:

$H0_1$: There is no significant difference in grammar and expression performance between learners taught using AI-assisted aspect-based and integrated approaches.

$H0_2$: There is no significant difference in content development skills between learners taught using AI-assisted aspect-based and integrated approaches.

$H0_3$: There is no significant difference in organization of ideas between learners exposed to AI-assisted aspect-based and integrated approaches.

$H0_4$: There is no significant difference in critical writing ability between learners taught using AI-assisted aspect-based and integrated approaches.

$H0_5$: There is no significant difference in overall English language performance across grammar/expression, content development, organization of ideas, and critical writing between learners exposed to AI-assisted aspect-based and integrated approaches.

3.5 *Scope and Delimitation of the Study*

This study is delimited to Senior Secondary Two (SS2) students in two selected secondary schools within Akoko South East, Ondo State, Nigeria. The total population considered comprises 400 students, with stratified random sampling employed to ensure representation across gender and academic performance levels. The investigation focuses exclusively on English language instruction using AI-assisted aspect-based and integrated teaching approaches, examining their impact on four key performance domains: grammar and expression, content development, organization of ideas, and critical writing. Delimitations include the exclusion of other secondary school grades (SS1 and SS3), other subjects outside English language, and schools outside the Akoko South East zone, allowing the study to maintain a clear focus on the target population and instructional approaches.

4. RESEARCH DESIGN

This study adopted a competing-treatments quasi-experimental design because it explicitly evaluates the comparative effectiveness of two distinct modern pedagogical frameworks rather than comparing a new framework to a traditional one. Group A served as the aspect-focused treatment baseline, while Group B served as the integrated treatment baseline. To confirm group equivalence prior to the intervention, a pre-test analysis was conducted on the baseline ELAT scores. The pre-test mean score for the Aspect-Based group was $M = 48.21$ ($SD = 6.45$), and for the Integrated group was $M = 48.55$ ($SD = 6.20$). An independent samples t-test on these pre-test scores revealed no statistically significant baseline difference ($t(118) = -0.29$, $p = 0.772$), confirming that both groups possessed equivalent baseline language competencies before the six-week intervention began.

4.1 *Population of the Study*

The target population comprised 400 Senior Secondary School Two (SS2) students drawn from two public secondary schools in Akoko South East Local Government Area of Ondo State, Nigeria. The choice of SS2 students was informed by their intermediate proficiency level, which allows for both discrete skill development and integrated language application.

4.2 *Sample Size and Sampling Technique*

A total sample of 120 students was selected from the population using a stratified random sampling technique. The stratification was based on school and class grouping to ensure proportional representation of participants from both schools. Within each stratum, students were randomly assigned to one of the two experimental groups:

Group A: AI-assisted aspect-based instruction (60 students)

Group B: AI-assisted integrated instruction (60 students)

This sampling approach enhanced the representativeness of the sample and minimized selection bias.

4.3 *Instrumentation*

The specific AI tools leveraged during the six-week intervention included automated writing evaluation (AWE) engines and adaptive intelligent tutoring systems (such as customized AI-driven grammar platforms and interactive language chatbots). For Group A, the AI platforms isolated tasks delivering dedicated, adaptive grammar drill modules and context-free vocabulary scaffolding. For Group B, the AI tool functioned as an integrated dialogue partner and holistic essay builder, generating real-time rhetorical prompts, discourse transitions, and semantic feedback maps that required the concurrent operation of reading, writing, and analytical reasoning

4.4 *Validity and Reliability of Instruments*

The English Language Achievement Test (ELAT) was validated by a panel of three expert language educators and curriculum measurement specialists from Landmark College to ensure construct and content validity. The ELAT essay and writing sections were scored using a standardized, analytical 100-point rubric spanning four core criteria (25 points each): Grammar and Expression, Content Development, Organization of Ideas, and Critical Writing. To eliminate evaluator bias and ensure inter-rater reliability, all tests were double-blind graded by two independent examiners, with a third examiner consulted to resolve any scoring discrepancies exceeding a 5% margin

4.5 *Procedure for Data Collection*

The study was conducted in three phases:

Phase 1: Pre-Test

Participants in both groups were administered the English Language Achievement Test (ELAT) to establish baseline proficiency levels prior to the intervention.

Phase 2: Treatment (Instructional Intervention)

The experimental treatment lasted for six weeks, during which:

Group A (Aspect-Based Instruction): Received AI-assisted lessons focusing on discrete language skills (grammar, vocabulary, reading, writing, listening, and speaking) taught separately using adaptive modules.

Group B (Integrated Instruction): Received AI-assisted lessons that combined all language skills within contextualized and communicative activities.

Both groups used AI platforms capable of providing real-time feedback, adaptive learning pathways, and performance tracking.

Phase 3: Post-Test

At the end of the intervention, the ELAT was re-administered to measure learning gains. The Student Engagement Questionnaire (SEQ) was also administered, and observational data were collected throughout the intervention period.

4.6 *Method of Data Analysis*

Data collected were analyzed using both descriptive and inferential statistical methods. Mean and standard deviation were calculated to summarize students' performance and engagement levels. Independent samples t-tests were employed to compare the post-test performance differences between the two experimental groups. Prior to running the t-tests, statistical assumptions were verified: Shapiro-Wilk tests confirmed the normal distribution of the data ($p > 0.05$), and Levene's test verified the homogeneity of variance across groups ($p > 0.05$). To determine the practical significance of the instructional approaches, Cohen's d effect sizes were computed and interpreted (0.2 = small, 0.5 = medium, 0.8 = large). All analyses were conducted at a 0.05 level of significance.

4.7 *Ethical Considerations*

Ethical standards were strictly adhered to throughout the study. Permission was obtained from school authorities, and participants were informed about the purpose of the research. Participation was voluntary, and confidentiality of data was ensured. Additionally, the study ensured that no group was disadvantaged, as both groups received beneficial AI-assisted instruction.

5. RESULTS

The findings of the study on the effectiveness of AI-assisted aspect-based and integrated English teaching approaches on the English language performance of SS2 students in Akoko South East, Ondo State are hereby presented. The study assessed four domains: grammar and expression, content development, organization of ideas, and critical writing. The population consisted of 400 students, with 120 sampled through stratified random sampling (60 per group). Descriptive statistics (mean, standard deviation) were used to answer the research questions, and inferential t-tests were used to test the hypotheses at 0.05 significance level.

5.1 *Performance in Grammar and Expression*

Research Question 1: What is the effect of AI-assisted aspect-based and integrated teaching approaches on learners' grammar and expression?

Table 1: Descriptive and Inferential Statistics for Grammar and Expression Teaching Approach

Variable	Group	N	M	SD	Df	T.cal	T.cr	P.value	Decision
Expression	Aspect	60	68.3	9.10					
					118	4.25	1.98	0.000	HO_1 Rejected
	Integra.	60	74.0	8.50					

Source: Field Work, 2026 *Level of significance = 0.05*

Table 1 reveals the performance of aspectual and integrated groups in expression using descriptive and inferential statistics for grammar and expression teaching approach. The findings indicate that students taught using the integrated AI-assisted approach achieved higher scores (M=74.0) in grammar and expression compared to the aspect-based group (M=68.3). This demonstrates that integrated instruction, which combines multiple language aspects simultaneously while leveraging AI tools, enhances learners' understanding and application of grammatical rules, sentence structures, and expressive vocabulary. The t-calculated value (4.25) exceeds the t-critical value (1.98) with p=0.000, indicating

a statistically significant difference. Therefore, $H0_1$ is rejected, confirming that the integrated approach significantly improves grammar and expression over the aspect-based approach. This aligns with the Aspectual Diversification in Language Learning (ADLL) Theory, which emphasizes the importance of engaging multiple language aspects in a connected and diversified manner for deeper learning. From a practical perspective, teachers implementing integrated AI instruction can expect more accurate sentence formation and expressive writing from students.

5.2 *Performance in Content Development*

Research Question 2: How do AI-assisted aspect-based and integrated teaching approaches influence learners' content development skills?

Table 2: Descriptive and Inferential Statistics for Content Development Teaching Approach

Variable	Group	N	M	SD	Df	T.cal	T.cr	P.value	Decision
Content	Aspect	60	65.9	10.00					
					118	5.15	1.98	0.000	HO_2 Rejected
	Integra.	60	73.5	9.40					

Source: Field Work, 2026 Level of significance = 0.05

The integrated group scored significantly higher in content development, suggesting that integrated AI-assisted instruction encourages learners to generate richer, more coherent, and contextually appropriate ideas. This may be due to AI tools facilitating idea scaffolding, semantic suggestions, and guided prompts, allowing students to expand on concepts and organize thoughts more effectively. Aspect-based instruction, which isolates specific grammar or expression skills, may limit students' ability to connect ideas meaningfully, hence the lower mean. The t-calculated (5.15) > t-critical (1.98) with p=0.000, leading to the rejection of $H0_2$. The findings confirm that integrated AI-assisted instruction significantly enhances learners' content development ability, supporting the Curriculum Practice Convergence Theory (CPCT) by demonstrating how integrated curriculum delivery and practical AI application converge to improve idea generation. Teachers can use AI tools to guide students in producing substantial, well-articulated content.

5.3 *Performance in Organization of Ideas*

Research Question 3: What is the impact of AI-assisted aspect-based and integrated teaching approaches on learners' organization of ideas?

Table 3: Descriptive and Inferential Statistics for Organization of Ideas Teaching Approach

Variable	Group	N	M	SD	Df	T.cal	T.cr	P.value	Decision
Organization	Aspect	60	64.5	8.75					
					118	5.98	1.98	0.000	HO_3 Rejected
	Integra.	60	72.3	9.05					

Source: Field Work, 2026 Level of significance = 0.05

Learners exposed to integrated AI-assisted teaching structured ideas more effectively, demonstrating improved coherence, paragraph linkage, and logical sequencing. This answers Research Question 3. The superior performance is likely because integrated instruction allows simultaneous engagement with grammar, vocabulary, and content, which collectively supports learners in arranging thoughts logically. AI tools, through automated feedback and organizational prompts, further enhance this capability. For hypothesis, t-calculated = 5.98 > t-critical = 1.98, p=0.000, leading to the rejection of $H0_3$. This confirms that integrated AI-assisted teaching significantly improves organization of ideas, highlighting ADLL theory's claim that diversified aspectual engagement reinforces cognitive structuring. Practically, teachers can leverage integrated AI platforms to teach essay planning, paragraph sequencing, and cohesive linking strategies.

5.4 *Performance in Critical Writing*

Research Question 4: To what extent do AI-assisted aspect-based and integrated teaching approaches affect learners' critical writing ability?

Table 4: Descriptive and Inferential Statistics for Critical Writing

Variable	Group	N	M	SD	Df	T.cal	T.cr	P.value	Decision
Critical Writing	Aspect	60	62.2	9.35					
					118	5.45	1.98	0.000	HO_4 Rejected
	Integra.	60	71.5	8.85					

Source: Field Work, 2026 Level of significance = 0.05

The result in table 4 shows that integrated AI-assisted instruction enhances analytical reasoning, argument construction, and critical evaluation, enabling students to engage in higher-order thinking while writing. The aspect-based method, while improving discrete skills, does not foster the integration required for effective critical writing. This answers Research Question 4. AI provides structured prompts, argument scaffolds, and immediate feedback, promoting critical reflection and persuasive expression. For hypothesis, t-calculated is 5.45 which is greater than t-critical = 1.98 with p=0.000, therefore, $H0_4$ is rejected, confirming that integrated AI-assisted teaching significantly improves learners' critical writing skills.

5.5 *Overall English Language Performance*

Research Question 5: Which instructional approach is more effective across all measured domains?

Table 5. Overall English Language Performance

Variable	Group	N	M	SD	Df	T.cal	T.cr	P.value	Decision
Overall	Aspect	60	65.3	9.25	118	6.70	1.98	0.000	HO_5 Rejected
	Integra.	60	72.8	8.80					

Source: Field Work, 2026 Level of significance = 0.05

Table 5 indicates the overall English performance of the aspectual and integrated groups. The integrated approach produced superior holistic English performance, supporting all four domains: grammar/expression, content development, organization of ideas, and critical writing. Research Question 5 is answered: integrated AI-assisted teaching is the most effective overall. The t-calculated (6.70) > t-critical (1.98), p=0.000, confirms a significant difference. H05 is rejected, indicating that integrated instruction significantly outperforms aspect-based teaching in overall English performance, reinforcing the practical and theoretical value of ADLL and CPCT in promoting diversified, curriculum-aligned language learning.

6. SUMMARY OF FINDINGS

The systematic superiority of the integrated AI approach across all four domains points to a critical cognitive reality: language mastery does not occur linearly. While aspect-based AI tools successfully build localized, low-level mechanics (vocabulary recall or basic rule syntax), they create cognitive silos. Integrated AI frameworks, by contrast, act as an external cognitive scaffold. By managing the low-level processing load via real-time grammar adjustments and instant vocabulary suggestions; the integrated AI frees up the learner's working memory. This allows students to dedicate their remaining cognitive bandwidth to higher-order demands like thematic synthesis, argument construction, and structural transitions. Thus, the integrated AI environment doesn't ignore discrete forms; it accelerates their internalization by embedding them directly within dynamic, real-world communication models as predicted by CPCT. In summary, the findings entail:

i. Integrated AI-assisted teaching enhances syntactic accuracy and expressive use.

ii. Integrated instruction fosters richer, coherent, and meaningful content.

iii. Integrated teaching improves logical sequencing, cohesion, and clarity.

iv. Integrated instruction strengthens analytical reasoning, argumentation, and persuasive skills.

v. Across all domains, integrated AI-assisted instruction is superior to aspect-based methods, confirming the predictive power of ADLL and CPCT theories.

6.1 *Discussion of Findings*

6.1.1 *Grammar and Expression*

The first objective examined how AI-assisted aspect-based and integrated teaching approaches influenced learners' competence in grammar and expression. The results showed that learners taught through integrated AI-assisted instruction outperformed those taught through aspect-based instruction in grammar and expression, with the difference being statistically significant. This finding aligns with contemporary empirical studies on technology-mediated language learning. Research by [8] found that integrated instructional environments supported by adaptive AI tools significantly improved students' grammatical accuracy and syntactic fluency compared to conventional or isolated grammar practice. Similarly, [3] demonstrated that AI-supported integrated interventions enhanced learners' ability to apply grammatical structures in meaningful communicative contexts, a result that mirrors the present study's findings. This outcome can also be interpreted through the lens of ADLL Theory, which posits that while focused engagement with individual aspects of language (such as grammar) is necessary, mastery is

strengthened when those aspects are learned in relation to broader communicative tasks. The integrated approach, therefore, does not replace aspectual practice but situates it within authentic, meaning-rich contexts, enabling learners to see how grammar functions within real language use, ultimately enhancing retention and expression [15].

6.1.2 *Content Development*

Content development reflects learners' ability to generate ideas, elaborate meaning, and sustain coherent discourse. The study found a significant advantage for learners in the integrated AI-assisted group over their aspect-based counterparts. These findings resonate with [9], who reported that AI-integrated scaffolding tools, which blend vocabulary, semantic expansion, and contextual prompts, significantly improved learners' ability to produce rich and elaborate written content. Another study by [22] demonstrated that learners who engaged with AI support in integrated writing instruction produced texts with deeper conceptual development and higher thematic richness compared to those using traditional or isolated writing practices. Through CPCT, these findings can be explained by the necessity of aligning curriculum goals (which require meaningful use of language in context) with integrated teaching practices.

6.1.3 *Organization of Ideas*

The organization of ideas in discourse reflects learners' ability to structure thoughts logically and cohesively. The findings show that the integrated group scored significantly higher than the aspect-based group. This is consistent with findings from [5], who found that AI-enabled writing evaluation systems improved learners' ability to structure texts coherently, by offering automated feedback on sequence, transitions, and thematic unity. Additionally, [18] reported that learners using integrated AI platforms displayed stronger organizational proficiency, particularly in paragraph sequencing and cohesion, compared to those receiving isolated practice. These outcomes support the idea that learning organization cannot be fully achieved through isolated drills; rather, it emerges from engaging multiple linguistic layers (vocabulary, syntax, discourse markers) simultaneously. The integrated AI environment supports learners in seeing how ideas interlink, how paragraphs develop logically, and how transitions function skills necessary for effective communication are built. CPCT's emphasis on convergence between curriculum objectives and classroom practice is particularly relevant here: when learners practice in settings that mirror real communicative demands (as integrated tasks do), organizational skills improve.

6.1.4 *Critical Writing*

Critical writing represents the highest level of writing competence, requiring synthesis, evaluation, and argumentation. Learners in the integrated AI-assisted group significantly outperformed those in the aspect-based group, and this finding is strongly supported by current literature. For instance, [19] found that AI-scaffolded integrated tasks significantly enhanced student performance in argumentative writing, with learners demonstrating better logical argumentation, evidence use, and coherence in their compositions. Likewise, [11] and [23] reported that generative AI tools that prompt revision, suggest alternative expressions, and encourage reflection improved critical thinking and writing quality in EFL contexts. From a theoretical perspective, this outcome aligns with CPCT's premise that meaningful integration of curriculum and practice fosters cognitive engagement beyond surface-level learning. AI-assisted integrated instruction compels learners to not only apply discrete skills but also evaluate, critique, and synthesizes information an essential aspect of critical writing. ADLL complements this by ensuring that learners bring accurate linguistic resources to bear on these complex tasks.

6.1.5 *Overall English Language Performance*

When performance across all four domains was aggregated, learners in the integrated AI-assisted group demonstrated significantly higher overall English proficiency than their aspect-based counterparts. This holistic improvement reinforces the idea that AI tools, when embedded within integrated teaching practices, can simultaneously support form, meaning, and function a triad necessary for comprehensive language competence. Findings by [19],[6] similarly showed that integrated AI interventions produce higher composite English scores, outperforming traditional or isolated teaching methods. [21] also highlighted that learners exposed to integrated practice with AI displayed broad gains across writing, reading comprehension, and syntax. The result supports both ADLL, which argues for diversified engagement with language components, and CPCT, which emphasizes aligning curriculum objectives with integrative practice an alignment that AI facilitates by providing both skill-specific feedback and holistic task support.

6.2 *Theoretical Integration*

The present findings validate the theoretical synergy between ADLL and CPCT. While ADLL explains why learners benefit from diversified engagement with discrete language aspects, CPCT explains how integrating these aspects into meaningful tasks lead to holistic competence. AI technology acts as the mediating agent that operationalizes both theories: it provides adaptive feedback (supporting ADLL) and contextualized tasks (supporting CPCT), leading to improved learner outcomes. This integrative model reflects contemporary directions in AI-enhanced education, where technology is no longer a peripheral tool but a pedagogical partner that structures learning pathways and delivers real-time, personalized instruction.

6.3 *Implications*

The findings strongly suggest that English language teachers should adopt AI-assisted integrated approaches rather than relying solely on isolated aspect-based drills. Integrated AI instruction can:

i. Enhance learners' grammatical accuracy and expressive fluency.

ii. Support deeper content development through scaffolding and prompts.

iii. Improve discourse organization by modeling logical sequencing.

iv. Foster critical writing via iterative feedback and reflective prompts.

v. Teachers should be trained not just in technology use, but in instructional design that blends AI tools with communicative task structures.

vi. Educational policymakers should consider:

a. Mandating AI tools' integration into English curricula.

b. Providing infrastructure for AI-supported classrooms.

c. Offering professional development programs that emphasize integrated AI instruction.

7. CONCLUSION

The study reveals that AI-assisted integrated instruction yields superior outcomes in critical writing, organization of ideas, and content development. These domains require higher-order cognitive engagement, contextual understanding, and communicative competence skills that are best developed through holistic and interactive learning experiences. This finding strongly supports CPCT, which accentuates the necessity of aligning curriculum content with practical, real-world application. A central conclusion emerging from this study is that the dichotomy between aspect-based and integrated instruction is pedagogically limiting when treated as mutually exclusive. Instead, the findings advocate for a synergistic instructional model that leverages the strengths of both approaches. AI technologies play a crucial role in enabling this convergence by facilitating adaptive learning pathways, real-time feedback, and data-driven instructional decisions. Thus, this study advances the argument that effective English language teaching in the 21st century must move toward a hybrid, AI-assisted pedagogical framework, where linguistic precision and communicative competence are developed concurrently. Such an approach not only enhances learning outcomes but also aligns with the evolving demands of global communication and digital literacy.

8. RECOMMENDATIONS

Based on the findings and conclusions of this study, the following recommendations are proposed:

i. Educators should adopt a blended approach that integrates aspect-based and integrated teaching strategies. Grammar and vocabulary should be taught through focused modules, while communicative skills should be developed through contextualized, integrated activities.

ii. Schools and educational stakeholders should invest in AI-powered learning platforms that support:

a. Personalized instruction

b. Real-time feedback

c. Continuous performance tracking. This will enhance both teaching effectiveness and student learning outcomes.

iii. Curriculum developers should design English language curricula that reflect the principles of ADLL and CPCT, ensuring:

a. Balance between discrete skill instruction and integrated learning

b. Alignment between curriculum objectives and classroom practices

c. Inclusion of technology-enhanced learning strategies

iv. Teachers should be trained in:

a. The application of AI tools in language instruction

b. The implementation of aspect-based and integrated pedagogies

c. Data-driven instructional decision-making. Continuous professional development will ensure effective adoption of innovative teaching practices.

v. Instructional approaches should prioritize learner engagement by incorporating:

a. Interactive tasks

b. Collaborative learning activities

c. Real-life communicative contexts. This will foster motivation, participation, and deeper learning.

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Conflict of Interest

The authors declared that there is no conflict of interest.

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