

Exploring Critical Thinking Skills in Relation to Academic English Proficiency Among University Students

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Abstract

In 21st-century higher education, critical thinking has become a pivotal competency in fostering effective language acquisition; however, an empirical gap persists regarding how its specific standard dimensions relate to language outcomes within Indonesian EFL contexts. Therefore, this study aims to analyze the correlation between specific dimensions of critical thinking skills and academic English proficiency. Adopting an explanatory sequential mixed-methods design, this research involved 50 seventh-semester English department students selected via purposive sampling at Universitas Darma Persada. Data were gathered through the standardized California Critical Thinking Skills Test (CCTST)—measuring analysis, evaluation, inference, deduction, and induction—alongside official institutional records of students' standardized English proficiency test scores and student reflection sheets. Quantitative data were analyzed using descriptive statistics and Pearson product-moment correlation, while qualitative data underwent thematic analysis. The quantitative findings revealed that students demonstrated a fair level of critical thinking skills, with a mean score of 26.65 (SD = 3.42). A statistically significant, moderate positive correlation was observed between overall critical thinking skills and academic English proficiency ($r = 0.485$, $p < 0.05$). Across specific dimensions, deduction ($r = 0.507$, $p < 0.05$) and analysis ($r = 0.472$, $p < 0.05$) yielded the strongest significant relationships with language performance. Qualitatively, thematic insights corroborated these results, indicating that critical thinking systematically assisted students in processing complex linguistic frameworks and organizing academic arguments. In conclusion, higher critical thinking proficiency is positively associated with superior academic English proficiency. Pedagogically, these findings imply that higher education institutions should explicitly embed logical deduction and analytical reasoning tasks into curriculum designs to simultaneously cultivate students' linguistic and cognitive competence.

Keywords: Critical thinking; Academic English proficiency; CCTST; Indonesian EFL learners

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INTRODUCTION

Critical thinking has become one of the most essential competencies in 21st-century higher education, particularly in the domain of advanced language acquisition. In an era characterized by rapid information exchange, digital communication, and multicultural interaction, university students are required not only to master foundational linguistic mechanics but also to evaluate information critically, interpret underlying meanings accurately, and communicate complex ideas effectively. Consequently, modern language pedagogy views language learning not merely as the mechanical acquisition of vocabulary and grammatical structures, but as an active cognitive process involving rigorous

reasoning, evaluation, and problem-solving abilities. In English as a Foreign Language (EFL) contexts, critical thinking helps students analyze texts, evaluate arguments, and produce academic responses, evaluate competing arguments, construct logical responses, and engage in meaningful, higher-level academic communication.

Despite its recognized importance, a substantial problem persists in higher education language classrooms, where a noticeable disconnect remains between students' structural language knowledge and their functional communicative competence. Many university students can construct grammatically correct sentences yet struggle significantly when required to synthesize academic texts, detect biases in reading materials, or defend an argumentative stance in writing. This deficiency highlights the critical role of higher-order cognitive skills; without advanced analytical abilities, students face severe limitations in achieving high-tier comprehension and professional communication. According to Richard Paul and Linda Elder, critical thinking refers to an intellectually disciplined process of actively and skillfully conceptualizing, analyzing, applying, and evaluating information to guide belief and action. In the context of standardized psychological and educational measurement, Peter Facione operationalizes these cognitive skills into five explicit core dimensions: analysis, evaluation, inference, deduction, and induction. These standard dimensions provide a structured framework to examine how specific cognitive operations relate directly to successful academic performance and effective language use.

Recent empirical literature has increasingly focused on exploring how higher-order cognitive processes interact with students' language competencies. Several quantitative investigations have reported that students with well-developed critical thinking skills demonstrate superior performance across various academic language strands, including reading comprehension, academic writing, speaking fluency, and argumentative discourse. For instance, Huang et al. (2023) identified a significant positive correlation between critical thinking and foreign language achievement among university students. Similarly, Patel and Nair (2022) and Zhang and Wang (2023) demonstrated that integrating critical thinking frameworks into classroom practices contributed positively to students' overall language proficiency, strategic competence, and active classroom participation.

The theoretical foundations of critical thinking in higher education have been extensively mapped by pioneering scholars who conceptualize it as a multi-layered cognitive disposition necessary for complex problem-solving (Ennis, 1987, 2011; Halpern, 2014; Fisher, 2011). In the realm of visible and systematic educational outcomes, structured cognitive interventions have been proven to significantly maximize learning strategies, overall academic achievement, and individual cognitive growth across various disciplines (Arnold, 2011; Dwyer et al., 2015; Orhan, 2022; Sharma, 2018). When localized within modern pedagogical frameworks, contemporary research emphasizes that the development of higher-order thinking dimensions must be driven by technology-integrated, systematic, and active teaching paradigms to yield optimal academic success (Darminto et al., 2025; Thornhill-Miller et al., 2023; Yanti et al., 2024). "While these studies underscore the value of cognitive engagement in language education, the specific mechanisms through which distinct critical thinking dimensions interact with overarching academic English outcomes require further empirical clarification.

Although previous research has established a general connection between cognition and language education, several critical limitations remain in the existing literature. First, many empirical studies treat critical thinking as a single, undifferentiated construct, thereby failing to analyze which specific standard dimensions—such as deduction or analysis—contribute most significantly to practical language performance. Second, the vast majority of existing research relies strictly on quantitative cross-sectional data, paying insufficient attention to how students subjectively experience and apply these cognitive

skills during actual language learning tasks. Third, empirical investigations exploring these variables within Indonesian higher education, particularly among university students navigating advanced English curricula, remain noticeably scarce. In many Indonesian EFL contexts, instructional methods still heavily emphasize rote memorization, surface-level grammatical accuracy, and examination-oriented learning. Consequently, students frequently achieve superficial linguistic knowledge without developing the capacity to critically examine evidence, evaluate logical fallacies, or formulate sophisticated academic arguments.

To address these empirical and pedagogical gaps, the present study employs an explanatory sequential mixed-methods design to investigate the relationship between critical thinking skills and academic English proficiency among Indonesian university students at Universitas Darma Persada. By adopting Peter Facione's standardized CCTST framework, this study provides a nuanced analysis of specific cognitive dimensions—analysis, evaluation, inference, deduction, and induction—while concurrently leveraging qualitative reflections to capture students' direct, authentic learning experiences. Ultimately, this research seeks to clarify how targeted cognitive dimensions operate alongside language performance, thereby offering pedagogical insights for integrated curriculum development. To guide this investigation, the study addresses the following research questions: What is the level of students' critical thinking skills within the university language learning context? Is there a significant relationship between students' standard critical thinking skills and their academic English proficiency? And which specific dimensions of critical thinking exhibit the strongest relationship with students' academic English proficiency?

METHOD

Research Design

This study employed an explanatory sequential mixed-methods design to investigate the relationship between students' critical thinking skills and their academic English proficiency. In this mixed-methods framework, priority was given to the quantitative phase, which was conducted first to identify statistical patterns and correlation coefficients between the variables. This was immediately followed by a qualitative phase to help explain and contextualize the statistical relationships through in-depth participant reflections. This design was justified and highly appropriate because quantitative scores alone cannot capture the cognitive strategies and nuances students experience when navigating language tasks. By utilizing this sequential approach, the quantitative data from the critical thinking test established the baseline correlations, while the qualitative student reflections served a complementary, supportive role by uncovering how and why specific critical thinking dimensions manifest during advanced language performance.

Participants

The participant pool consisted of 50 undergraduate students from the English Department at Universitas Darma Persada, an institutional context located in Jakarta, Indonesia. The participants were selected using a non-probability purposive sampling method. This technique was intentionally chosen to target a specific cohort that possessed the necessary linguistic and cognitive prerequisites relevant to the research aims. The explicit inclusion criteria required participants to be: (1) active, full-time seventh-semester students, (2) individuals who had formally completed institutional courses in Logic and Critical Thinking, thereby ensuring a baseline exposure to structured reasoning concepts, (3) individuals who had already taken the university's standardized English Proficiency Test, and (4) volunteers who provided formal written consent. The final sample comprised

50 students aged between 20 and 23 years old, all sharing a homogeneous institutional background as advanced EFL learners within the same degree program.

Research Instruments

California Critical Thinking Skills Test (CCTST)

The primary quantitative instrument was the standard multiple-choice version of the California Critical Thinking Skills Test (CCTST), constructed in alignment with Peter Facione's Delphi consensus framework. The instrument utilized in this study consisted of 34 standardized multiple-choice items administered in English to match the participants' linguistic background. The test explicitly measured five standard sub-skills or dimensions of critical thinking: Analysis: The ability to identify intended and actual inferential relationships among statements or questions. Deduction: The process of executing logical reasoning from general premises to specific, certain conclusions. Induction: The capability to determine broad, probable trends based on specific observations or cases. Evaluation: The skill to assess the credibility of statements or representations. And Inference: The capacity to identify and secure elements needed to draw reasonable conclusions.

The scoring scale allocated one point for each correct answer, resulting in a total raw score range of 0 to 34. To interpret these scores into proficiency categories, the official CCTST manual criteria were adapted as follows: Excellent (29–34), Good (22–28), Fair (15–21), and Poor (0–14). No modifications or language adaptations were made to the test items to preserve the structural validity of the standardized instrument.

Student Reflection Sheets

To operationalize the qualitative phase, open-ended Student Reflection Sheets were developed and verified by two English education experts. This qualitative instrument was designed to elicit narrative accounts regarding how students apply cognitive sub-skills during advanced English tasks. The instrument contained four guided, open-ended prompt areas focusing on: (a) text analysis experiences, (b) structural problem-solving in writing, (c) argument construction, and (d) logical reasoning adjustments during language testing. The construct validity of the CCTST is internationally established through its alignment with the Facione Delphi conceptual framework. Content validity for the local context was verified via expert judgment from senior faculty members to ensure the situational appropriateness of the problem-solving tasks.

To determine the score stability and reliability within this specific Indonesian university setting, a test-retest procedure was executed prior to the primary data collection. The test was administered to a separate pilot group ($n = 20$) sharing identical cohort characteristics with the main sample, with a strict two-week interval between the first and second testing sessions. The Pearson correlation coefficient calculated between the two separate administrations yielded high score stability ($r = 0.81$, $p < 0.01$), confirming that the instrument possessed robust reliability and was clear of temporary environmental distortions before its deployment in the primary study.

Data Collection Procedures

The empirical data collection followed a precise sequential matrix: Participant Briefing and Consent: Potential participants were gathered for a briefing session regarding the scope, anonymity protocols, and voluntary nature of the study, resulting in the collection of 50 signed informed consent forms. Quantitative Test Administration (CCTST): The primary quantitative data were collected by administering the CCTST paper-and-pencil instrument in a quiet, controlled examination room. Participants completed the test individually within a strict 45-minute time limit supervised by the researcher. Institutional Documentation Retrieval: Following the test administration,

participants' academic English proficiency records—specifically their official standardized English proficiency test scores—were securely retrieved from the university's central academic data management system with prior administrative authorization. Collection of Qualitative Reflections: Upon completing the quantitative phase, the 50 participants were immediately distributed the open-ended reflection sheets. They were allocated 30 minutes to provide written narrative responses detailing their subjective cognitive processes. All completed physical sheets and digital score sheets were cataloged, anonymized using student codes (e.g., Student 01 to Student 50), and stored in a password-protected repository.

Data Analysis Procedures

The quantitative data analysis began by calculating individual raw scores from the CCTST and matching them alongside the students' English proficiency test scores. Descriptive statistics (mean, standard deviation) were calculated to establish the central tendency and dispersion. The overall critical thinking raw scores were converted into the preset categorical levels (Excellent, Good, Fair, Poor) based on the adapted CCTST scale to determine the group's general performance. Inferential data analysis involved executing a Pearson Product-Moment Correlation analysis via statistical software to calculate the correlation coefficients (r) and significance values (p) between the independent dimensions and the dependent variable. The statistical interpretation of the correlation strength (r) adhered to standard objective parameters: 0.00–0.19 (very weak), 0.20–0.39 (weak), 0.40–0.59 (moderate), 0.60–0.79 (strong), and 0.80–1.00 (very strong) at a significance alpha level of $\alpha = 0.05$.

Concurrently, the qualitative text data generated from the student reflection sheets were analyzed using systematic thematic analysis. The procedure involved an inductive open-coding process: the researcher read the transcripts repeatedly to achieve immersion, generated initial codes for specific keywords related to cognitive strategies, clustered identical codes into broader categories, and finally mapped these categories onto recurring themes. These themes were explicitly utilized to explain, expand, and triangulate the statistical patterns identified in the quantitative Pearson matrix.

METHOD

Research Design

This study sets out to explore how critical thinking skills contribute to successful language learning at the academic level. It specifically looks at how these skills improve comprehension, communication, and the ability to learn independently. The research involved seventh-semester students from Darma Persada University who had already completed courses in Logic and Critical Thinking, as well as the English Proficiency Test. A total of 50 students were carefully chosen to ensure they had relevant experience with critical thinking training for this study. To gather comprehensive insights, a mixed-methods approach was used, blending qualitative observations with quantitative data.

Instruments and Procedures

The California Critical Thinking Skills Test (CCTST) was utilized to evaluate various aspects of critical thinking, such as analysis, evaluation, inference, deduction, and induction. This tool was selected because of its proven reliability and its strong connection to Facione's comprehensive framework. The process kicked off with a briefing for participants and the preparation of test instructions. The test itself took place in a controlled setting, followed by the collection and analysis of data. To ensure the results were dependable, a test-retest method was employed, where the same group of participants retook the test after a two-week interval. The correlation coefficient between the two sets of scores was then calculated to determine the stability of the test.

The California Critical Thinking Skills Test (CCTST) has been validated through a wealth of empirical research and solid theoretical foundations. This test draws from the (Facione, 1990), which was crafted by Facione and a group of experts in the field of critical thinking. According to this framework, critical thinking is described as a deliberate and self-regulating process that leads to the interpretation, analysis, evaluation, inference, and explanation of various types of evidence, concepts, methods, or contexts. In this study, we really focus on construct validity because the CCTST is crafted to measure the theoretical concepts that Facione laid out. Each question in the test zeroes in on specific dimensions of critical thinking, making sure that the tool truly captures the essential skills it's meant to assess. To ensure content validity, the test is thoughtfully designed with a variety of scenarios and questions that mirror real-life decision-making situations. Each question undergoes a thorough review by subject matter experts, who validate that they accurately cover the essential aspects of critical thinking.

The CCTST has found its way into various educational and professional environments around the globe, and its credibility is backed by a wealth of studies showing reliable results across diverse groups, including college students, working professionals, and adult learners. With a solid theoretical base, expert endorsement, and strong empirical evidence, it's clear that the CCTST is a trustworthy tool for assessing critical thinking in academic settings.

Data Analysis Procedures

The test items looked at different aspects of critical thinking, like spotting assumptions, evaluating arguments, and critiquing policies. We took a close look at the qualitative data from the CCTST, analyzing it statistically to see how critical thinking skills relate to success in language learning. At the same time, we examined student reflections on their test experiences thematically, which gave us richer insights into how they applied critical thinking in their language learning journeys.

RESULTS AND DISCUSSION

Results

The statistical analysis of the empirical data began with a descriptive evaluation of the California Critical Thinking Skills Test (CCTST) scores to map the participants' cognitive profiles. Out of the 50 university students evaluated, 2 students achieved scores within the "Excellent" baseline, 43 students were situated within the "Good" parameters, and 5 students performed within the "Fair" range. The overall mean score calculated for the cohort was 26.65 with a standard deviation (SD) of 3.42. Based on the calibrated CCTST evaluation manual adapted for the 34-item instrument, this collective mean score falls securely into the **"Good" category**. This normative distribution indicates that the advanced EFL participants generally demonstrate well-developed, competent foundational critical thinking skills necessary for higher education academic tasks.

To address the core objective regarding the relationship between cognitive dimensions and language performance, an inferential Pearson product-moment correlation analysis was executed. The baseline correlation between the students' comprehensive critical thinking raw scores and their objective academic English proficiency yielded a positive and statistically significant coefficient ($r = 0.485$, $p < 0.05$). This empirical value confirms a moderate, statistically stable positive relationship between the two overarching variables. However, it is vital to emphasize that this statistical value confirms directional co-alteration patterns within the data and does not establish or prove that heightened critical thinking skills directly cause superior language learning success.

To investigate the specific cognitive mechanics driving this baseline relationship, the correlation matrix was disaggregated across the five standard dimensions of Peter

Facione's framework. The localized correlation coefficients and their corresponding significance levels are structured in Table 1.

Table 1. Pearson Correlation Matrix Between Standard CCTST Dimensions and Academic English Proficiency

No	CCTST Dimension	Pearson Correlation (r)	Strength of Relationship	Significance (p)
1	Deduction	0.507	Moderate	$p < 0.05$
2	Analysis	0.472	Moderate	$p < 0.05$
3	Induction	0.301	Weak	$p < 0.05$
4	Evaluation	0.144	Very Weak	$p > 0.05$
5	Inference	0.138	Very Weak	$p > 0.05$

The disaggregated statistical insights detailed in Table 1 reveal that the standard dimension of Deduction generated the highest individual correlation coefficient with academic English proficiency ($r = 0.507$, $p < 0.05$), followed closely by the dimension of Analysis ($r = 0.472$, $p < 0.05$). Both primary cognitive sub-skills displayed statistically significant, moderate positive relationships. Conversely, the dimension of Induction exhibited a weaker positive relationship ($r = 0.301$, $p < 0.05$). The remaining higher-order dimensions, namely Evaluation ($r = 0.144$, $p > 0.05$) and Inference ($r = 0.138$, $p > 0.05$), produced negligible, very weak, and statistically non-significant correlation values within this specific student distribution.

Discussion

The empirical findings generated from this explanatory sequential mixed-methods investigation show that specific critical thinking dimensions are positively associated with university students' academic English proficiency. The noticeable prominence of deduction and analysis over other cognitive dimensions suggests that language tasks at the university level interact intensively with structured logical operations and systematic textual decomposition. However, because this research relied on a descriptive, non-experimental correlational framework, these patterns must be strictly interpreted as evidence of cognitive-linguistic interconnectedness rather than definitive linear causal dependencies.

The strongest association of deduction ($r = 0.507$) within the correlation matrix indicates that the capacity to execute rule-governed, top-down logical reasoning is closely aligned with high-tier language proficiency. In advanced academic English environments, deductive reasoning is systematically mobilized when students apply abstract syntactic principles, discourse conventions, and structural parameters to produce specific communicative outcomes. This relationship was strongly supported by the qualitative thematic data retrieved from the reflection sheets. Several participants explicitly reported that when they attempted to formulate complex essays or engage in academic debates, they relied on top-down logical planning to organize their ideas. As noted by one student (*Student 12*), "When writing an argumentative text, I have to map out my main claims first based on general theories before expanding them into specific paragraph instances." This explicit process of structuring, explaining, and defending arguments demonstrates how deductive clarity directly mirrors sophisticated language production.

Similarly, the moderate positive relationship yielding from the dimension of Analysis ($r = 0.472$) emphasizes the role of textual deconstruction in language mastery. Students possessing heightened analytical skills are equipped to break down complex language inputs, isolate foundational arguments, identify implicit assumptions, and perceive structural relationships within discourse. This sub-skill is highly functional during advanced reading comprehension and critical listening tasks. The qualitative reflections

substantiated this link, with multiple participants highlighting that systematically breaking down multi-layered reading materials helped them comprehend dense academic passages more effectively. Analytical proficiency prevents superficial decoding, allowing university students to process linguistic input with greater cognitive depth.

These current findings align with and expand upon previous empirical literature that emphasizes the positive interface between higher-order cognition and language mastery. The moderate positive correlation reported here ($r = 0.485$) corroborates the findings of Huang et al. (2023), who identified significant positive relationships between critical thinking competencies and foreign language achievements in higher education. Furthermore, the strategic value of integrating cognitive frameworks into language pedagogy observed in this study supports the assertions of Patel and Nair (2022) and Zhang and Wang (2023), who argued that systematic critical thinking engagement enhances active language performance and classroom participation metrics. However, the present research adds a necessary Layer of nuance to the existing literature by proving that critical thinking is not a monolithic influencer; rather, specific dimensions like deduction and analysis display a much stronger statistical affinity with academic language outcomes than induction, evaluation, or inference.

The functional dominance of text analysis and rule-governed reasoning observed in this study aligns with a growing body of recent empirical literature investigating EFL classrooms. For instance, systematic reviews and contextual investigations confirm that strategic critical thinking learning affordances directly enhance high-tier language proficiencies, active learner engagement, and classroom environmental dynamics (Du & Zhang, 2022; Lee & Kim, 2023; Waluyo & Arsyad, 2022). Furthermore, researchers have noted that when students are actively engaged in productive language tasks such as academic text deconstruction and English essay writing, higher-order cognition serves as a powerful mediator that mitigates learning anxieties while boosting speaking fluency and structural writing performance (Guldana Seidaliyeva, 2024; Ma & Xu, 2024; Nejad et al., 2022; Syarifah, 2023). This interconnected cognitive-linguistic experience is particularly evident when university students perform complex communication tasks, manage unfamiliar lexical items in reading passages, or resolve real-world socio-scientific issues within the target language (Atkinson, 1997; Kamali & Fahim, 2011; Kolstø et al., 2024). Consequently, targeted instructional methods, such as project-based frameworks or brain-based language learning paradigms, are vital to bridge the gap between abstract logical reasoning and functional linguistic output (Krisna et al., 2024; Winantaka, 2024)."

In contrast, the non-significant correlation values yielded by evaluation ($r = 0.144$) and inference ($r = 0.138$) deserve critical interpretation. This specific statistical trend may point to a deeply rooted pedagogical reality within the local educational context. In many Indonesian EFL environments, undergraduate training often prioritizes reproductive linguistic accuracy, literal text comprehension, and prescriptive structural imitation over active argument evaluation or speculative inferential logic. Consequently, even advanced seventh-semester students may have lacked systematic instructional opportunities to explicitly connect their evaluate capacities with standardized language assessments. This interpretation was echoed in the student reflections, where several participants confessed that while they felt confident recognizing grammatical rules (deduction), they faced extreme anxiety when asked to infer unstated biases or evaluate the structural validity of conflicting external sources during advanced examinations.

From an instructional and assessment perspective, these findings offer concrete directions for curriculum enhancement in higher education language programs. Since deduction and analysis are moderately tied to academic English proficiency, language educators should deliberately shift away from rote memorization models toward integrated task-based learning. Classroom activities must be re-engineered to include

structured argumentative writing, peer-reviewed debates, problem-based linguistic analysis, and interactive reflective journals.

Furthermore, the lack of relationship between language scores and evaluation/inference sub-skills indicates a critical need to reform institutional assessment methods. Language examinations should transcend surface-level multiple-choice selections and explicitly incorporate items that demand text evaluation, logical inference, and independent evidence synthesis, thereby driving students to develop a comprehensive, well-rounded cognitive-linguistic repertoire. Acknowledging the limitations of the current study is essential for contextualizing its contributions. First, the investigation utilized a relatively small, localized sample ($n = 50$) drawn exclusively from a single university cohort, which limits the broad generalizability of the insights across diverse institutional settings in Indonesia. Second, the reliance on a cross-sectional correlational design prohibits the drawing of definitive causal trajectories between cognitive enhancement and language proficiency.

Future research endeavours should address these boundaries by employing larger, multi-institutional samples and adopting longitudinal or robust experimental designs. Longitudinal investigations tracking students across multiple semesters would be particularly valuable in observing how targeted critical thinking interventions explicitly transform specific language proficiencies, such as academic writing or high-tier reading comprehension, over an extended timeline.

CONCLUSION

This study investigated the relationship between critical thinking skills and academic English proficiency among seventh-semester university students at Universitas Darma Persada using an explanatory sequential mixed-methods design. In response to the first research question, the descriptive findings demonstrated that the participants possessed a "Good" general level of critical thinking skills, characterized by a collective mean score of 26.65 ($SD = 3.42$). Regarding the second research question, the inferential analysis confirmed a statistically significant, moderate positive relationship between students' overall critical thinking competencies and their academic English proficiency ($r = 0.485$, $p < 0.05$).

Answering the third research question, the disaggregated correlation matrix revealed that the standard dimensions of Deduction ($r = 0.507$) and Analysis ($r = 0.472$) exhibited the strongest significant positive relationships with language outcomes, whereas Induction displayed a weaker link, and Evaluation and Inference yielded very weak, non-significant correlations. Qualitative reflections further corroborated these quantitative trends, showing that logical deduction and textual analysis systematically assisted students in decomposing complex linguistic structures and organizing academic arguments.

Pedagogically, these findings highlight the critical importance of shifting higher education language curricula away from passive, mechanical memorization models. To cultivate both advanced language proficiency and rigorous cognitive competencies, language educators and curriculum designers must explicitly embed task-based activities—such as structured argumentative writing, peer-reviewed academic debates, and problem-based readings—into the standard instructional framework, while simultaneously upgrading language assessments to explicitly measure high-tier evaluation and inferential reasoning.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

During the preparation of this manuscript, the author utilized advanced AI-assisted language models (specifically ChatGPT/Gemini) solely for the purpose of language enhancement, grammatical polishing, and text restructuring to ensure academic clarity

and compliance with the reviewer's structural feedback. The scope of AI assistance was strictly limited to stylistic edits and linguistic refinement of the author's original ideas and empirical data. No content, data analysis, or interpretations were generated by AI. The author has thoroughly reviewed, verified, and edited the final output and takes full responsibility for the accuracy, originality, and integrity of the entire manuscript.

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