

IMPROVING CRITICAL THINKING IN FOREIGN LANGUAGE LEARNING THROUGH CHATGPT: A CASE STUDY AT DONG NAI TECHNOLOGY UNIVERSITY

Trinh Vu Thanh Tuyen^{1*}, Nguyen Vu Thu Ngan¹, Le Tien Trung Linh¹

¹*Dong Nai Technology University.*

*Corresponding author: *Trinh Vu Thanh Tuyen, trinhvuthanhtuyen@dntu.edu.vn.*

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ABSTRACT

In the era of AI-assisted education, integrating generative tools into language learning offers new opportunities to foster both linguistic and critical thinking skills. This study investigates the effectiveness of using ChatGPT as a dialogic partner to enhance critical thinking among non-English major students learning a foreign language. Grounded in Vygotsky's Sociocultural Theory and the concept of dialogic learning, ChatGPT was employed as a virtual interlocutor to facilitate argumentation, reflection, and inquiry. A quasi-experimental design was conducted with 346 students at Dong Nai Technology University, Vietnam, over ten weeks. The experimental group engaged in structured debates and reflective tasks with ChatGPT, while the control group followed conventional practice activities. Pre- and post-tests, along with semi-structured interviews, revealed that the experimental group achieved greater improvements in both critical thinking and language production. Qualitative findings highlighted that AI-assisted dialogue created a supportive environment that encouraged deeper cognitive engagement. These results underscore the potential of generative AI not only as a language learning aid but also as a cognitive scaffold with implications for curriculum innovation, student training, and responsible AI integration in education.

1. INTRODUCTION

1.1. Background of the study

The rapid advancement of artificial intelligence (AI) has transformed educational practices, particularly in language learning,

where emphasis is shifting from memorization to interactive and reflective approaches. Critical thinking has become an indispensable competency in this context, especially for non-English majors who often lack opportunities for authentic language interaction (Paul & Elder,

2014; Tiwari et al., 2000). Existing scholarship indicates that dialogic learning-constructing knowledge through dialogue-enhances engagement and fosters deeper learning outcomes (Mercer & Littleton, 2007).

Vygotsky's Sociocultural Theory (1978) provides a useful lens for understanding how learners progress through mediated interaction. Within this framework, ChatGPT functioned as a "quasi or simulated more knowledgeable other..." that supports learners in their Zone of Proximal Development (ZPD). By delivering immediate, adaptive feedback, conversational AI offers unique opportunities to scaffold both linguistic performance and metacognitive growth (Tang, 2025).

Despite growing interest in AI applications for education, limited empirical research has examined ChatGPT's role as a dialogic partner in promoting critical thinking in foreign language learning, particularly for students outside English-related fields. Addressing this gap, the present study investigates whether AI-assisted dialogue can strengthen both cognitive and linguistic development among non-English major students at Dong Nai Technology University. By focusing on structured, reflective interactions with ChatGPT, the study contributes to ongoing discussions on the pedagogical potential and ethical integration of generative AI in higher education.

1.2. Research gap

Two understudied topics are highlighted by recent meta-analyses (e.g., Koç & Savaş, 2025): (1) the cognitive impact of generative AI as a dialogic learning partner, and (2) its efficacy with non-English majors in Asian higher education contexts.

By investigating ChatGPT's capacity to scaffold the development of critical thinking, our study fills in these gaps.

1.3. Literature Review

1.3.1. Definition of ChatGPT

ChatGPT, a sophisticated language model developed by OpenAI, is based on the Generative Pre-trained Transformer (GPT) architecture. It is designed to generate text that closely resembles human communication through the application of natural language processing (NLP) and machine learning methodologies (OpenAI, 2023). Trained on an extensive corpus of internet-based text data, ChatGPT is capable of understanding context, providing coherent responses, and simulating meaningful dialogues across a wide range of topics. In contrast to traditional rule-based chatbots, ChatGPT employs probabilistic modelling, enabling it to produce contextually appropriate, adaptive, and interactive responses (Brown et al., 2020). Its dialogic capabilities render it particularly advantageous for educational applications, where it can function as a virtual peer, tutor, or language practice partner.

1.3.2. Definition of critical thinking skills

Critical thinking skills encompass the capacity to analyze, evaluate, and synthesize information to make reasoned judgments and effectively solve problems. Facione (1990) defines critical thinking as "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteria, logical, or contextual considerations upon which that judgment is based" (p. 2). These skills involve not only cognitive processes such as reasoning and problem-solving but also dispositions like open-mindedness, intellectual humility, and a willingness to reconsider or revise beliefs based on evidence (Ennis, 2011). In educational contexts, fostering critical thinking is deemed essential for learners to

become independent thinkers and informed decision-makers.

1.3.3. Definition of dialogic learning

Dialogic learning represents an educational methodology that underscores the significance of dialogue and interaction within the learning process. It is predicated on the principle that knowledge is constructed through communicative exchanges wherein participants share, question, and collaboratively construct meaning. As articulated by Flecha (2000), dialogic learning "takes place through dialogue that is egalitarian, in which arguments are valued over power positions, and where all participants contribute meaningfully regardless of their status" (p. 2). Rooted in Vygotsky's sociocultural theory and Bakhtin's concept of dialogism, this approach perceives learning as a collaborative and transformative process. Learners actively engage with diverse perspectives, thereby fostering both cognitive and social development (Wegerif, 2007).

1.3.4. Previous studies

There are numerous studies relating to this research. For example, Tang (2025) conducted an investigation into the utilization and perception of AI tools, such as ChatGPT, by second language (L2) learners during writing tasks. The findings revealed that students valued the feedback and language modelling provided by ChatGPT, although concerns regarding overreliance and accuracy were noted. The authors emphasized ChatGPT's potential to aid both language production and cognitive processes, including planning and revision.

In addition, Guo, Wang, & Chu, (2022) examined the role of ChatGPT in enhancing argumentation and critical thinking within EFL writing classrooms. Through scaffolder tasks utilizing AI-assisted prompts, students

demonstrated improved abilities in evaluating ideas and constructing logical reasoning. The study highlights ChatGPT's potential as a dialogic tool when effectively integrated with pedagogical guidance. Besides that, Wegerif (2007) underscored the significance of dialogic learning in fostering deeper thinking and perspective-taking among students. The book illustrates how dialogic interaction—whether with peers, teachers, or digital agents—can enhance reasoning and metacognition in educational settings.

Last but not least, Koç & Savaş (2024) conducted a quasi-experimental study on the integration of AI-based chatbots in foreign language learning. The results indicated significant improvements in learners' speaking and critical thinking skills, attributed to the immediate and interactive nature of AI conversations. Moreover, Mercer and Howe (2012) provided a comprehensive review of how classroom dialogue can enhance students' reasoning skills. The authors found that structured dialogue, characterized by reasoning, elaboration, and mutual listening, led to measurable improvements in critical thinking.

In Vietnamese context, a study from Pham & Le (2024) conducted a study examining the views of 77 Vietnamese students in Vietnam and the U.S. on using ChatGPT for language learning. Results show positive perceptions of its role in answering questions, generating ideas, and enhancing engagement. However, overreliance may limit critical thinking. A balanced use of ChatGPT with traditional methods is recommended for optimal learning outcomes.

Additionally, Do (2022) analysed the current state and demand for critical thinking development in non-specialized English teaching at Vietnamese universities. Pham & Le (2024)

argues that current programs are predominantly focused on grammar and vocabulary, lacking integration of higher-order thinking activities. Nguyen & Ha (2021) focused on the application of digital tools in developing speaking skills and critical thinking. The authors propose the use of online forums and AI tools to create a safe dialogic space, thereby stimulating critical thinking and debate. Nguyen & Hoang (2024) conducted the most recent study utilizing ChatGPT as a virtual interactive entity in non-specialized English classes at a university in southern Vietnam. Preliminary results indicate that ChatGPT supports students in questioning, critical thinking, and simulating thought-provoking conversations.

1.3.5. Theoretical framework

This study is based on the ideas of Dialogic Learning (Flecha, 2000; Wegerif, 2007) and Vygotsky's Sociocultural Theory (1978), which highlight the importance of social interaction and dialogue in promoting language and cognitive development. As a "more knowledgeable other," ChatGPT supports students' development within the Zone of Proximal Development (ZPD).

To further understand students' motivation when utilizing AI, the study additionally makes use of the Self-Determination Theory (SDT) (Deci & Ryan, 2000). According to SDT, relatedness, competence, and autonomy are necessary for long-term learning motivation. ChatGPT may increase students' intrinsic motivation by enabling self-paced participation and offering adaptive feedback.

Furthermore, the Technology Acceptance Model (TAM) (Davis, 1989) is beneficial for assessing how students view the utility and simplicity of use of ChatGPT in academic settings. These perceptions influence their decision to use AI tools for language acquisition and critical thinking growth.

1.4. Expected contributions

Theoretical: By viewing ChatGPT as a semi-automated "more knowledgeable other," it expands on Dialogic Learning and Sociocultural Theory.

Practical: Offers repeatable AI-assisted lesson plans, prompt templates, and evaluation procedures.

Policy: Provides suggestions for institutional rules for the moral, open, and responsible use of AI.

2. METHODOLOGY

The pretest–posttest control group design was quasi-experimental. Due to institutional constraints, full randomization was not feasible; therefore, propensity score matching was employed prior to group assignment. Prior GPA, CEFR level, and previous English course grades were matching variables.

G*Power 3.1 was used for an a priori power analysis. The necessary minimum sample size was 210 with $\alpha = .05$, power = .80, and an expected medium effect size ($f = .25$ based on comparable studies). This criterion is exceeded by our final sample ($N = 346$), guaranteeing sufficient power.

2.1. Research questions

This study aimed to explore the effectiveness of ChatGPT as a dialogic partner in enhancing critical thinking skills in a foreign language learning context among non-English major students. The following research questions guided the study:

1. To what extent does the use of ChatGPT improve the critical thinking skills of non-English major students compared to conventional language practice?

2. How does ChatGPT influence students' foreign language production and engagement in critical dialogue?

3. What are students' perceptions of using ChatGPT as a tool to support critical thinking in language learning?

Research hypotheses

According to the theoretical framework and research aims, the study presents the following hypotheses:

- H1: ChatGPT significantly improves critical thinking skills in non-English major students compared to traditional language practice.

- H2: ChatGPT improves foreign language performance (vocabulary, grammar, and expressiveness) compared to the control group.

- H3: Students evaluate ChatGPT positively as a dialogic learning partner, but have worries about overreliance and the veracity of AI responses.

2.2. Participants

The research encompassed 346 undergraduate students, not majoring in English, who were enrolled in general English courses at Dong Nai Technology University, Vietnam, during the second semester of the 2024–2025 academic year. The participants represented a range of academic disciplines, including Information Technology, Business Administration, and Civil Engineering. All participants had completed a minimum of two prior semesters of English instruction and were assessed at a pre-intermediate to intermediate proficiency level (A2–B1 according to the CEFR). To guarantee baseline equivalency between the two groups, Propensity Score Matching (PSM) was used to assign the participants to either the experimental group ($n = 173$) or the control group ($n = 173$).

2.3. Research instruments

To evaluate the impact of the intervention, the following instruments were utilized:

Critical thinking skills test: A standardized foreign language critical thinking test, adapted from Facione's (1990) California Critical Thinking Skills Test (CCTST), was localized for Vietnamese learners. This test assessed five core skills: interpretation, analysis, inference, evaluation, and explanation.

Language performance tasks: Pre- and post-intervention writing and speaking tasks were designed to evaluate language complexity, accuracy, and coherence in response to prompts necessitating critical reasoning (e.g., argumentative or problem-solution tasks).

Semi-structured interviews: These were conducted with a representative sample of 30 students from the experimental group to collect qualitative data on their perceptions and experiences using ChatGPT.

Reflective journals: Students in the experimental group were required to write brief weekly reflections on their experience interacting with ChatGPT, focusing on perceived support, cognitive challenge, and language development.

2.4. Data collection procedures

The study was conducted over a period of 10 weeks. Prior to the intervention, both groups completed pre-tests, which included a critical thinking test and language performance tasks. During the intervention:

The experimental group engaged with ChatGPT using structured prompts designed to elicit critical dialogue, debate, and reflection. These prompts required students to adopt positions, justify claims, pose questions, and critique ChatGPT's responses. Students

interacted with ChatGPT twice weekly in guided sessions facilitated by their instructors.

In contrast, the control group participated in traditional communicative language activities, such as discussions, grammar-based exercises, and role-plays, without the support of AI.

At the conclusion of the intervention, both groups completed post-tests, and qualitative data, including interviews and journals, were collected from the experimental group.

2.5. Data analysis procedures

Quantitative data were analyzed utilizing SPSS (Version 26). A paired-sample t-test and ANCOVA were employed to evaluate within-group and between-group differences in critical thinking and language performance scores. Effect sizes (reported using partial η^2 and Cohen's d) were calculated to ascertain the practical significance of the findings.

Qualitative data derived from interviews and reflective journals were analyzed through thematic analysis with inter-coder reliability (Braun & Clarke, 2006), with a focus on identifying recurring patterns related to cognitive engagement, perceived benefits, challenges, and student attitudes toward AI-assisted learning.

2.6. Quantitative data analysis

The quantitative data were obtained from pre- and post-intervention assessments of students' critical thinking skills and foreign language performance. Statistical analyses were conducted using IBM SPSS Statistics (Version 26).

Data screening and assumptions

All data were screened for normality, outliers, and missing values. The Shapiro-Wilk test indicated approximately normal distributions. Levene's test confirmed

homogeneity of variances ($p > .05$), satisfying assumptions for ANCOVA.

Descriptive statistics

Means and standard deviations were calculated for both the experimental and control groups on:

- Critical thinking test (pre- and post-test)
- Language performance tasks (writing and speaking combined rubric scores)

Inferential Statistics

Paired-sample t-tests:

- The experimental group showed significant gains in both critical thinking skills ($t(172) = 21.34$, $p < .001$, $d = 1.62$) and linguistic performance ($t(172) = 18.76$, $p < .001$, $d = 1.43$), indicating large effect sizes.

- Control group students also demonstrated statistically significant gains, but the extent of change was reduced for critical thinking, $t(172) = 12.01$, $p < .001$, $d = 0.91$, and language performance, $t(172) = 10.45$, $p < .001$, $d = 0.79$.

ANCOVA:

- For critical thinking post-test scores, the ANCOVA revealed a significant main effect of group, $F(1,343) = 68.12$, $p < .001$, partial $\eta^2 = .17$, indicating a large effect.

- For language performance post-test scores, a significant group effect was also observed, $F(1, 343) = 54.67$, $p < .001$, partial $\eta^2 = .14$, suggesting a medium-to-large effect.

Effect Sizes:

- Critical thinking: $d = [0.65-0.80]$ (moderate-large).

- Language performance: $d = [0.50-0.70]$ (moderate).

Overall, the statistical results indicate that the experimental group achieved greater gains

than the control group after the ChatGPT-supported intervention.

2.7. Qualitative data analysis

To complement the statistical results, qualitative data were collected from:

- Semi-structured interviews with 30 students from the experimental group.
- Weekly reflective journals completed by all experimental group students during the 10-week intervention.

Analytic approach

Thematic analysis (Braun & Clarke, 2006) was employed, following six phases from familiarization to report writing. Coding combined deductive categories (dialogic interaction, reflection, engagement) and inductive codes emerging from the data. Two independent coders achieved 91% agreement after discussion.

Emerging themes

Four major themes were identified:

- Perceived cognitive stimulation

Students reported that ChatGPT's follow-up prompts encouraged deeper reflection, justification, and reconsideration of viewpoints.

- Language development through practice
Learners noted improvements in vocabulary, grammar, and fluency when articulating abstract ideas in interaction with ChatGPT.

- Low-anxiety learning environment
Students appreciated the non-judgmental nature of the AI, which made them feel more comfortable practicing language skills.

Emerging concerns and limitations

Participants expressed reservations about over-reliance on AI, limited emotional nuance, and occasional factual inaccuracies.

These themes provide insight into learners' experiences and perceptions of AI-assisted dialogic learning.

3. FINDINGS AND DISCUSSIONS

3.1. Quantitative results

To assess the impact of ChatGPT on students' critical thinking and foreign language development, a mixed-method approach was employed. A post-intervention questionnaire was administered to 173 students in the experimental group, alongside pre- and post-test comparisons using both descriptive and inferential statistics.

Table 1. Descriptive statistics for student questionnaire on ChatGPT use (n = 173)

Dimension	Sample Item	Agree/Strongly Agree (%)	Mean (M)	Standard Deviation (SD)
Cognitive Engagement	"ChatGPT encouraged me to think more deeply about my ideas."	87.3	4.32	0.56
	"I had to justify my opinions when using ChatGPT."	84.5	4.28	0.61
Language Development	"I learned useful sentence structures through ChatGPT."	82.1	4.17	0.63

Dimension	Sample Item	Agree/Strongly Agree (%)	Mean (M)	Standard Deviation (SD)
	“ChatGPT improved my ability to express ideas clearly.”	78.9	4.08	0.68
Affective Experience	“I feel less anxious speaking English with ChatGPT.”	88.4	4.41	0.52
	“I feel more confident expressing my ideas via ChatGPT.”	85.7	4.33	0.57
Perceived Challenges	“Sometimes I cannot verify ChatGPT’s information.”	41.6	3.02	0.81
	“I rely too much on ChatGPT for ideas or answers.”	15.0	2.51	0.76

Note. Items were rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Descriptive statistics

The experimental group’s mean post-test scores increased from $M = 62.45$ to $M = 78.92$ for critical thinking, and from $M = 65.13$ to $M = 76.30$ for language performance. The control group also showed gains, but with smaller improvements.

Paired-sample *t*-tests

- Critical thinking: $t(172) = 21.34$, $p < .001$, $d = 1.62$ (experimental)

- Language performance: $t(172) = 18.76$, $p < .001$, $d = 1.43$ (experimental)

Both results indicated large effect sizes.

ANCOVA results

After controlling for pre-test scores, significant group effects were found:

- Critical thinking: $F(1, 343) = 68.12$, $p < .001$, partial $\eta^2 = .17$

- Language performance: $F(1, 343) = 54.67$, $p < .001$, partial $\eta^2 = .14$

The ANCOVA confirmed that the experimental group outperformed the control group, with medium to large effect sizes.

3.2. Qualitative results

In addition to test results, student perceptions were collected through questionnaires and thematic analysis of interview/journal data.

Questionnaire results

The questionnaire included 20 Likert-scale items and three open-ended questions. Findings were as follows:

- *Cognitive engagement:* 87.3% of students reported that ChatGPT prompted deeper reflection, while 84.5% indicated it encouraged them to justify their ideas.

- *Language development:* 82% noted improvements in vocabulary and sentence structure, and 74% reported better fluency and clarity in expressing ideas.

- *Affective experience*: 88.4% felt reduced anxiety when interacting with ChatGPT, and 85.7% gained greater confidence in expressing complex ideas.

- *Perceived challenges*: 41.6% raised concerns about accuracy, 37.4% about distinguishing AI-assisted content from their own, and 15% about overreliance on AI.

Interview and journal data (thematic analysis)

Four themes emerged from the qualitative analysis:

- *Cognitive stimulation* – Students described ChatGPT’s follow-up questions as promoting deeper reasoning and reflection.

- *Language development* – Participants reported vocabulary growth, improved grammar, and greater fluency.

- *Affective support* – Learners emphasized the low-anxiety, supportive nature of AI interaction.

- *Concerns and critical awareness* – Some students expressed doubt about factual reliability and risk of overreliance, while also developing more critical awareness of AI-generated content.

3.3. Discussion

The findings of this study confirm that integrating ChatGPT as a dialogic learning tool can significantly enhance both critical thinking and foreign language proficiency among non-English major students. This section discusses the implications of these results in light of existing literature and theoretical perspectives, particularly Vygotsky’s Sociocultural Theory and the principles of dialogic learning.

ChatGPT and critical thinking development

Quantitative analysis showed a marked improvement in critical thinking scores for the

experimental group, suggesting that AI-assisted dialogue can foster higher-order reasoning skills. This aligns with prior research indicating that AI-driven interaction enhances analytical thinking, problem-solving, and reflection (Almulla, 2022; Guo et al., 2022). The dialogic exchanges with ChatGPT appear to have created cognitive conflict—a key condition for stimulating critical thought (Mercer & Littleton, 2007).

Qualitative evidence reinforced this result. Students described being pushed to defend their positions, reconsider arguments, and refine their reasoning, which supports Vygotsky’s (1978) view of learning as movement within the Zone of Proximal Development (ZPD). In this way, ChatGPT served as more than a practice tool; it operated as a cognitive partner guiding learners toward greater autonomy in reasoning.

Language proficiency gains

The intervention also produced significant improvements in foreign language performance, particularly in fluency and vocabulary use. This outcome reflects Wegerif’s (2007) assertion that language and thought are intertwined in dialogic education. By combining critical reflection with linguistic practice, ChatGPT facilitated a dual process of cognitive and communicative growth.

Students further emphasized the value of a supportive environment. Many highlighted that the AI’s nonjudgmental feedback encouraged experimentation, risk-taking, and self-correction—all essential behaviors for successful second language acquisition (Swain, 2005).

Critical awareness and digital literacy

An additional benefit identified through interviews was the development of students’ critical stance toward AI-assisted content. Rather than accepting responses uncritically, learners began to question, verify, and cross-reference

information. This behavior reflects growth in digital literacy and a shift in epistemic beliefs from viewing knowledge as fixed to recognize its complexity and uncertainty (King & Kitchener, 2004).

Educational and pedagogical implications

The study highlights the potential of ChatGPT to transform foreign language classrooms by:

- Providing adaptive, real-time dialogue that supports personalized learning;
- Creating a safe and feedback-rich space for cognitive and linguistic development;
- Encouraging metacognitive reflection and learner autonomy;
- Cultivating AI literacy and critical awareness.

These benefits suggest that teacher training should extend beyond technical use of AI to include strategies for designing dialogic tasks that foster both linguistic competence and critical thinking.

Nevertheless, challenges remain. While ChatGPT promoted engagement and offered immediate feedback, limitations such as occasional inaccuracies, lack of emotional intelligence, and risks of overreliance were noted. Consequently, AI should be positioned as a complement to, rather than a replacement for, human instruction. Teacher mediation remains crucial to ensure students critically evaluate AI outputs instead of relying on them uncritically.

4. CONCLUSION

4.1. Conclusion

This study provides evidence that ChatGPT, when framed within Vygotsky's Sociocultural Theory and dialogic learning, can serve as an effective pedagogical tool to foster both critical

thinking and foreign language development among non-English major students. Its contributions lie in highlighting AI's role not only as a language aid but also as a dialogic partner that supports reflection, argumentation, and learner motivation.

The findings suggest important implications for practice: integrating generative AI into language education requires thoughtful instructional design, promotion of critical AI literacy, and adherence to ethical use. As AI continues to shape educational landscapes, it is vital that pedagogical frameworks evolve to ensure technology enhances—rather than substitutes—human interaction and learning.

4.2. Limitations of the study

This study acknowledges several limitations. First, it was carried out at a single university, which may limit the generalizability of the results. Second, the quasi-experimental approach lacked perfect randomization, which could introduce selection bias. Third, the effectiveness of ChatGPT was heavily reliant on prompt design and student motivation, which may differ in different circumstances. Despite its limitations, the work provides important insights into AI-assisted learning. Future study should take a multi-institutional approach, investigate long-term effects, and compare ChatGPT to other AI-based technologies.

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CẢI THIỆN TƯ DUY PHẢN BIỆN TRONG VIỆC HỌC NGOẠI NGỮ QUA CHATGPT – MỘT TRƯỜNG HỢP NGHIÊN CỨU TẠI TRƯỜNG ĐẠI HỌC CÔNG NGHỆ ĐỒNG NAI

Trịnh Vũ Thanh Tuyền^{1*}, Nguyễn Vũ Thu Ngân¹, Lê Tiến Trung Linh¹

¹Trường Đại học Công Nghệ Đồng Nai.

*Tác giả liên hệ: *Trịnh Vũ Thanh Tuyền*, trinhvuthanhtuyen@dntu.edu.vn.

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AI trong giáo dục;

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Sinh viên không chuyên tiếng Anh.

TÓM TẮT

Trong kỷ nguyên giáo dục do AI - hỗ trợ, việc tích hợp các công cụ nhân tạo vào việc học ngôn ngữ mang đến những cơ hội mới để nuôi dưỡng cả kỹ năng ngôn ngữ và tư duy phản biện. Nghiên cứu này tìm hiểu hiệu quả của việc sử dụng ChatGPT như một đối tác đối thoại để tăng cường tư duy phản biện ở những sinh viên không chuyên tiếng Anh. Dựa trên Lý thuyết văn hóa xã hội của Vygotsky và khái niệm học tập đối thoại, ChatGPT được sử dụng như một đối thoại ảo để tạo điều kiện cho việc lập luận, phản ánh và tìm hiểu. Một thiết kế bán thử nghiệm đã được tiến hành với 346 sinh viên tại Đại học Công nghệ Đồng Nai, Việt Nam, trong hơn mười tuần. Nhóm thử nghiệm tham gia vào các cuộc thảo luận có cấu trúc và các bài tập tương tác với ChatGPT, trong khi nhóm đối chứng tuân theo các hoạt động thực hành thông thường. Các bài kiểm tra trước và sau, cùng với các cuộc phỏng vấn bán cấu trúc, cho thấy nhóm thử nghiệm đạt được những cải thiện lớn hơn về cả tư duy phản biện và phát triển ngôn ngữ. Các

phát hiện định tính nhấn mạnh rằng cuộc hội thoại do AI làm trung gian đã tạo ra một môi trường hỗ trợ khuyến khích sự tham gia nhận thức sâu sắc hơn. Những kết quả này nhấn mạnh tiềm năng của AI không chỉ là một công cụ hỗ trợ học ngôn ngữ mà còn là một nền tảng nhận thức có ý nghĩa đối với đổi mới chương trình giảng dạy, đào tạo sinh viên và tinh thần trách nhiệm đưa AI vào giáo dục một cách có chọn lọc.
