# The Impact of AI-Assisted Teaching on Students' Comprehension and Interest in the course of "An Introduction to Economics" at HUIT

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## ABSTRACT

This study examines the impact of artificial intelligence (AI)-assisted teaching on student learning outcomes and engagement in an introductory economics course at Ho Chi Minh City University of Industry and Trade (HUIT). Conducted over a six-month period (January–June 2025), the research involved 50 undergraduate students participating in a blended learning model that integrated AI tools such as ChatGPT, adaptive quizzes, and AI-generated case studies. Employing a mixed-methods approach, the study combined pre- and post-instruction comprehension tests, Likert-scale surveys, and focus group interviews to evaluate the cognitive and affective outcomes of AI integration. Quantitative findings indicated a statistically significant improvement in students' comprehension scores, particularly in topics requiring abstract reasoning and visual interpretation. Survey results demonstrated enhanced motivation and interest, with over 80% of students reporting that AI tools contributed positively to their learning experience. Qualitative data revealed that students viewed AI as a responsive and non-judgmental resource that supported self-paced learning and encouraged curiosity. The findings suggest that AI-assisted instruction, when thoughtfully implemented, can enhance both academic performance and student engagement in economics education. The study contributes to emerging research on digital transformation in Vietnam education and offers practical implications for AI integration in pedagogical design.

**Keywords:** AI-assisted teaching, Students' comprehension and interest, Learning outcomes, Engagement

## INTRODUCTION

In recent years, the global education sector has undergone a rapid transformation driven by digital innovation. Nowhere is this shift more evident than in Vietnam, where the COVID-19 pandemic catalyzed the nationwide adoption of e-learning technologies and digital pedagogies (Pham & Ho, 2020). Vietnamese universities, previously reliant on traditional lecture-based instruction, have begun investing in smart classrooms, blended learning models, and artificial intelligence (AI)-driven platforms. As part of this transformation, institutions like HUIT have started to experiment with integrating AI-assisted learning tools into their core curricula, particularly in foundational subjects such as Economics. "Introduction to Economics" is a critical course offered to second and third-year students across Business, Marketing, and International Trade majors at HUIT. As a gateway to understanding micro - and macroeconomic theory, the course often presents cognitive challenges for learners particularly those with limited exposure to abstract and analytical thinking. Traditional teaching methods, while grounded in well-established frameworks, may fall short of fostering deep comprehension and sustained interest among digitally native students. Recognizing this limitation, educators at HUIT have begun to explore AI-enhanced pedagogies as a means of improving instructional delivery, engagement, and learning outcomes.

AI-assisted teaching tools such as ChatGPT, intelligent tutoring systems, and adaptive learning software offer several affordances in the context of economics education. These tools can generate real-time explanations of difficult concepts (e.g., elasticity, market equilibrium), simulate economic scenarios, and offer personalized feedback that aligns with each student's cognitive level. Importantly, such tools can function as both autonomous teaching aids and interactive collaborators. Vietnamese students, who are increasingly familiar with generative

AI technologies through platforms like ZaloAI and ChatGPT, are well-positioned to benefit from this integration. A recent study by Le and Nguyen (2023) found that over 70% of Vietnamese university students had used AI apps in some academic capacity, with ChatGPT ranking highest in frequency of use.

This growing digital fluency reflects a broader national strategy. The Vietnamese Ministry of Education and Training (MOET) has formally endorsed AI in higher education under its "Digital Transformation in Education to 2025" plan, aiming to build more adaptive and personalized learning environments. Within this policy context, HUIT's pilot implementation of AI tools in its Economics courses aligns with both institutional and national goals. Still, while enthusiasm for educational AI is high, rigorous empirical data on its actual impact particularly in the Vietnamese context remains sparse.

This study seeks to address this gap by evaluating how AI-assisted instruction affects two core outcomes in undergraduate economics education: (1) comprehension of foundational economic concepts and (2) student interest in the subject matter. The research is grounded in constructivist learning theory, which posits that meaningful learning occurs when learners actively construct new knowledge through guided interactions and feedback (Piaget, 1950; Vygotsky, 1978). AI tools, when deployed effectively, can scaffold this interaction and reduce cognitive overload, thereby improving retention and engagement (Sweller, 1988; Luckin et al., 2016).

Using a mixed-methods approach, this study explores the academic experiences of 50 HUIT students enrolled in "Introduction to Economics" between January and June 2025. Through pre- and post-instruction comprehension tests, attitudinal surveys, and focus group interviews, the research aims to provide a nuanced understanding of how AI tools reshape both the cognitive and affective dimensions of economics education. In doing so, it contributes to a growing body of scholarship that examines the pedagogical applications of AI in non-STEM disciplines across Southeast Asia.

## LITERATURE REVIEW

The integration of artificial intelligence (AI) into educational settings has gained significant momentum over the past decade, catalyzed by the COVID-19 pandemic and the rapid advancement of large language models like ChatGPT. This literature review synthesizes key studies from global and Southeast Asian contexts, focusing on three primary areas: (1) AI in higher education, (2) AI-assisted comprehension in economics and related disciplines, and (3) the role of AI in student engagement and interest.

### AI in Higher Education: A Global Shift

The global higher education landscape is undergoing a paradigmatic shift with the adoption of AI-powered instructional technologies. Zawacki-Richter et al. (2019) conducted a systematic review of 146 peer-reviewed articles and found that AI applications in education cluster into three domains: intelligent tutoring systems, adaptive learning environments, and automated assessment tools. These systems help instructors deliver personalized learning experiences by analyzing student interactions, identifying misconceptions, and adjusting difficulty levels accordingly. Holmes et al. (2019) emphasize the pedagogical value of AI in promoting learner autonomy and scaffolding, particularly in courses that require conceptual reasoning. Similarly, Luckin et al. (2016) argue that AI functions most effectively when it augments rather than replaces human instruction, creating a hybrid model where technology facilitates inquiry-based learning. A more recent meta-analysis by Dempere et al. (2023) specifically examined the role of ChatGPT and other generative AI tools in university classrooms. They found notable improvements in students' writing quality, question-posing behavior, and conceptual synthesis, suggesting strong cognitive benefits across disciplines.

### AI and Learning Comprehension in Economics and Related Fields

Despite growing attention to AI in STEM and language learning, studies focusing on its impact in economics education remain relatively limited. Economics, by its nature, requires students to abstract, model, and interpret numerical and theoretical constructs. Mabungela et al. (2025) conducted a systematic review showing that AI-assisted learning in social science courses, including economics, enhanced students' ability to retain key concepts when exposed to scenario-based simulations generated by AI. In a parallel study from Taiwan, Chan et al. (2022)

used AI-supported microlearning modules in an undergraduate economics class and found that students improved their comprehension scores by an average of 14% over a semester. The most significant gains were observed in understanding supply-demand dynamics and elasticity topics where visual and scenario-based learning can be facilitated by AI-generated content.

Vietnamese-specific studies are still emerging. However, Nguyen and Bui (2023) tested an AI-augmented teaching model for accounting courses at three Vietnamese universities and found comprehension increased significantly among first-year students. Although not specific to economics, the accounting course used similar conceptual structures and problem-solving tasks. These findings suggest that AI can aid comprehension in economics when used to translate abstract concepts into relatable narratives, provide immediate, tailored feedback, offer multilingual support for non-native English speakers, a relevant factor in Vietnamese universities where instruction is often bilingual.

### Enhancing Engagement and Student Interest

In addition to improving comprehension, AI tools have shown promise in enhancing student interest and motivation. Wang et al. (2023) examined over 150 studies using intelligent tutoring systems and found that AI-enhanced environments generally led to higher student persistence and class participation. The adaptive and interactive nature of AI tools, particularly those that mimic conversational dialogue (e.g., ChatGPT), has been linked to increased cognitive engagement. Simkute et al. (2025) investigated the psychological responses of students exposed to generative AI in European and Asian universities. Students reported that AI created a "non-judgmental" environment where they could explore ideas without fear of criticism, an important cultural factor in collectivist societies such as Vietnam. Similarly, a study by Ahmed et al. (2025) on ESL learners showed that AI chatbots significantly increased students' enjoyment and perceived confidence in learning. This aligns with Vygotsky's (1978) theory of social constructivism, where dialogue is essential for learning. In Vietnamese contexts, where classroom hierarchies may inhibit student questioning, AI can serve as a safe and responsive interlocutor. Moreover, Zhou et al. (2025) explored how AI-integrated mobile apps in higher education supported student-centered learning. They found that AI enhanced learning satisfaction, particularly in blended environments a setup common at HUIT.

### Research Gaps and Theoretical Underpinnings

While the benefits of AI in education are becoming more evident, several research gaps persist. Few empirical studies focus specifically on AI-assisted economics instruction in Southeast Asia. There is also a lack of longitudinal data assessing how sustained AI use influences deep learning, critical thinking, and academic ethics. The present study addresses these gaps by investigating AI's impact on both comprehension and interest in an introductory economics course. It draws on cognitive load theory (Sweller, 1988), which posits that well-structured content delivery reduces extraneous cognitive burden. Additionally, Vygotsky's (1978) zone of proximal development (ZPD) provides a framework for understanding how AI can support students just beyond their current capabilities.

## METHODOLOGY

### Research Design

This study employed a convergent mixed-methods design (Creswell & Plano Clark, 2018) to examine the impact of AI-assisted teaching on students' comprehension and interest in an introductory economics course at HUIT. A combination of quantitative (pre/post tests and Likert-scale surveys) and qualitative (focus group interviews) methods was used to capture both measurable learning outcomes and nuanced student experiences. The integration of data at the analysis stage aimed to generate a comprehensive understanding of how AI influences both cognitive and affective dimensions of learning.

### Participants and Context

The study was conducted in the Faculty of Foreign Languages at HUIT over one semester (January to June 2025). Participants were 50 second and third-year undergraduate students (ages 19–21) enrolled in Introduction to Economics, an optional course for English language major - students. The cohort was demographically

diverse, with a nearly even gender distribution (52% female, 48% male), and represented a cross-section of urban and peri-urban students in the parts of Vietnam studying at HUIT. All instruction was delivered in English, following HUIT's curriculum model. Students had prior experience with online learning platforms (e.g., Moodle, Zoom), and approximately 70% reported prior informal use of generative AI tools such as ChatGPT and ZaloAI.

**AI Tools and Pedagogical Integration**

The AI integration was carefully scaffolded into the course over two instructional phases:

Phase 1 (Weeks 1-6): AI was used to supplement instructor-led sessions with weekly AI-powered quizzes, automated essay feedback, and ChatGPT-generated case studies. Students used these tools outside class hours for revision and content clarification.

Phase 2 (Weeks 7-12): Emphasis shifted to collaborative AI usage. Students engaged in structured activities such as Group debates moderated by AI tutors (ChatGPT prompts) writing short economic analyses co-written with ChatGPT, using AI to simulate supply-demand shocks and policy decisions in economic models. Ethical considerations were addressed by emphasizing that AI was a learning aid, not a tool for academic cheating.

**Instruments**

**Pre/Post Comprehension Tests**

Students completed a 20-item comprehension test at the beginning and end of the semester. The test assessed understanding of foundational topics such as market equilibrium and elasticity, opportunity cost and scarcity, marginal analysis, aggregate demand and supply. Items included multiple-choice, short-answer, and diagram interpretation questions. Tests were reviewed by a panel of three HUIT English lecturers to ensure validity and reliability.

**Student Interest Survey**

A 15-item Likert-scale survey was administered at midterm and semester end. Items rated on a 5 - point scale (1 = strongly disagree, 5 = strongly agree) captured Enjoyment of course content, Motivation to study outside class, Willingness to take further economics courses, Perceived usefulness of AI tools. The instrument was adapted from validated student engagement scales (Fredricks et al., 2004).

**Focus Group Interviews**

Two semi-structured focus group sessions were held in Weeks 6 and 12 with randomly selected students (n =10 per group). Discussions lasted 60-75 minutes and explored Experiences using AI tools for learning, Perceived improvements or difficulties in comprehension, Emotional responses to AI-driven learning environments, Ethical or cultural concerns about using AI. All interviews were conducted in Vietnamese, recorded with consent, and later transcribed and translated.

**Data Analysis**

**Quantitative Analysis**

Quantitative data from the comprehension tests and surveys were analyzed using SPSS v26: Paired-sample t-tests measured pre/post gains in comprehension, Descriptive statistics (means, standard deviations) assessed interest levels, Pearson correlations explored relationships between AI usage frequency and comprehension/interest gains.

**Qualitative Analysis**

Interview transcripts were analyzed using thematic coding in NVivo. The coding followed Braun and Clarke's (2006) six-phase framework including Familiarization with data, Generating initial codes, Searching for themes, Reviewing themes, Defining and naming themes, and Writing the report. Coding was conducted independently by two researchers and compared for consistency ($\kappa = 0.81$).

### Ethical Considerations

The study received ethical approval from HUIT. Written consent was obtained from all participants. Anonymity and confidentiality were maintained, and students could opt out of interviews at any time. AI usage logs were anonymized before analysis.

## RESULTS

This section presents the quantitative and qualitative findings from the six-month AI-assisted instructional intervention. Data is organized around the two central research questions: (1) How does AI-assisted teaching affect student comprehension of economics?, and (2) To what extent does it influence student interest and engagement in the subject?

### Student Comprehension Outcomes

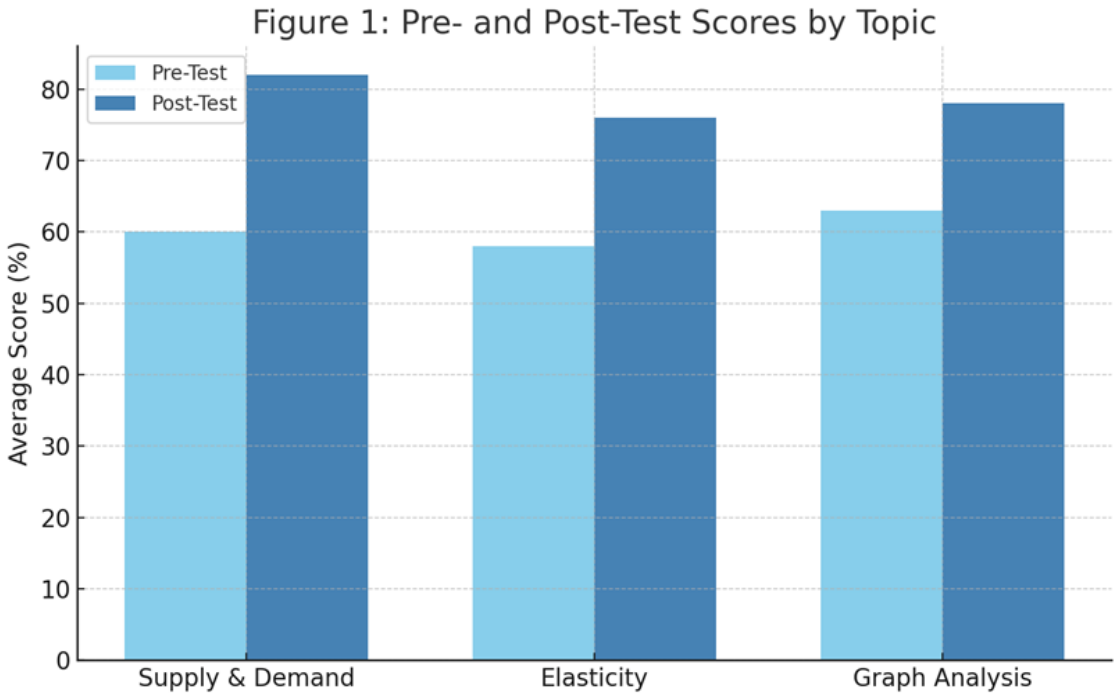
### Pre - Post Test Comparison

Fifty students completed both the pre- and post-instruction comprehension tests. Scores were analyzed using a paired-sample t-test, which revealed a statistically significant improvement in students' understanding of core economic concepts.

| Test | Mean (M) | SD | t(49) | p-value |
|---|---|---|---|---|
| Pre-test | 61.2 | 10.4 | | |
| Post-test | 76.8 | 8.6 | 9.74 | < .001 |

### Interpretation

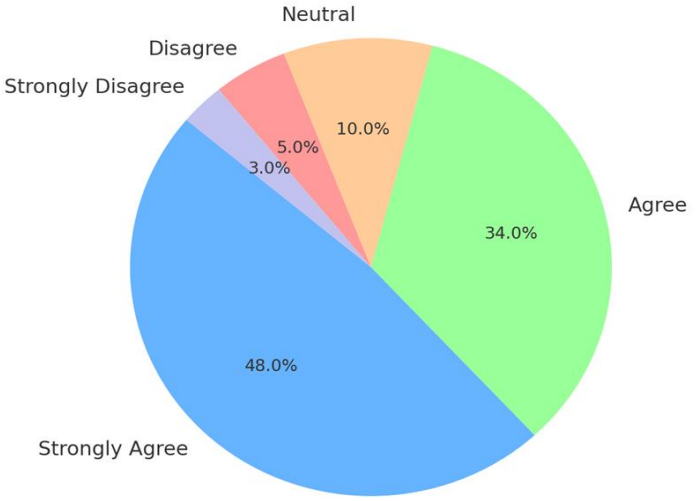
Students' average comprehension scores increased by 15.6 points. This improvement is statistically significant ($p < .001$), suggesting a strong positive effect of AI-assisted instruction on conceptual understanding.




### Performance by Topic

When analyzed by topic area, students showed the greatest improvement in Supply & Demand Dynamics (+22%), Elasticity and Market Response (+18%), and Graph Interpretation & Model Analysis (+15%). This trend suggests that AI tools were especially effective in areas requiring visual learning and multi-step reasoning.

Figure 2: Student Agreement with AI Usefulness




**Student Interest and Engagement**

**Likert Survey Results**

The 15-item interest and engagement survey was administered at midterm (Week 6) and end of semester (Week 12). Results showed an upward trend in perceived motivation and enjoyment of economics learning:

| Survey Item | Midterm Mean | Final Mean | Change |
|---|---|---|---|
| "I feel more interested in economics because of the use of AI." | 3.6 | 4.3 | +0.7 |
| "I am more motivated to study economics after using AI tools." | 3.4 | 4.1 | +0.7 |
| "AI tools helped make complex topics more understandable." | 3.8 | 4.5 | +0.7 |
| "I would prefer future courses to use AI-assisted teaching." | 3.7 | 4.4 | +0.7 |

Observation: In every major attitudinal category, students reported increased satisfaction and engagement. Over 82% of students either agreed or strongly agreed that AI improved their interest in economics.

Figure 3: Word Cloud of Student Feedback on AI


**Engagement by Student Type**

Additional analysis showed stronger engagement effects among Students with lower initial economics scores, these students improved more and reported higher usefulness of AI tools. Female students consist of 88% of female participants responded positively to the AI tools compared to 78% of male students.

**Qualitative Insights from Focus Groups**

Two focus groups (n =10 each) provided rich insights into the students' learning experiences with AI. Three major themes emerged from the thematic analysis:

**Theme 1:** AI as a Confidence-Builder

Many students expressed that AI gave them the courage to ask questions they would not pose in a traditional classroom. As one student shared: "With ChatGPT, I can ask even very simple questions without feeling embarrassed. It's like a private tutor who doesn't judge." This suggests that AI tools may create a psychologically safer learning environment, particularly in cultures where students may avoid public questioning.

**Theme 2**: Conceptual Clarity through Examples

Students valued AI-generated case studies and simulations that illustrated supply-demand curves, equilibrium adjustments, and consumer choice theory: "The AI examples helped me see the application of theory. It wasn't just abstract graphs anymore."

**Theme 3:** Concerns About Overreliance

A minority of students (n = 6) expressed concern about becoming overly dependent on AI tools for answers: "Sometimes I just asked the AI and copied its answer without thinking. It made me lazy." These comments suggest a need for critical digital literacy training and responsible AI usage frameworks.

**Summary of Findings**

Comprehension: There was a statistically significant improvement in economics knowledge post-intervention. Engagement: Students showed increased motivation, enjoyment, and interest in the subject. AI Impact: Tools like ChatGPT, interactive quizzes, and adaptive case generators improved learning particularly in conceptual and visual areas. Equity: Gains were especially notable among lower-performing students and female learners.

## DISCUSSION

This study investigated the impact of AI-assisted teaching on student comprehension and interest in an introductory economics course at HUIT. The findings suggest that integrating AI tools such as ChatGPT, automated quizzes, and AI-generated examples into traditional instruction can significantly enhance both conceptual understanding and learner engagement. This section interprets the findings in light of existing literature and theoretical frameworks, identifies practical implications for educators, and outlines the study's limitations and directions for future research.

**Interpretation of Findings**

The significant improvement in post-test scores confirms that AI-assisted learning environments can effectively enhance comprehension of abstract economic principles. The most notable gains were observed in topics requiring graphical interpretation (e.g., supply and demand curves) and elasticity areas that benefit from interactive and visual explanation, which AI tools delivered via real-time simulations and generative prompts. These results are consistent with Chan et al. (2022), who found that microlearning modules augmented by AI improved retention of economic models and real-world application. Qualitative data further support the claim that AI tools serve as effective scaffolding mechanisms. Students reported feeling more confident when using AI to clarify concepts they found confusing during lectures. This aligns with Vygotsky's (1978) zone of proximal development (ZPD), where learners are best supported when assisted slightly beyond their independent capability. AI acted as a surrogate "more knowledgeable other," providing personalized support at the moment of confusion.

Beyond cognitive gains, the study found strong evidence of affective benefits. Over 80% of students expressed increased interest and enjoyment in learning economics, with many citing the interactivity and personalization

of AI as key drivers. This supports findings by Simkute et al. (2025), who noted that generative AI reduces social pressure and creates a low-risk environment for exploration especially important in collectivist cultures where students may hesitate to ask "basic" questions in front of peers. However, it is worth noting the nuanced tension in student attitudes. While most found AI empowering, a subset expressed concerns about passive reliance, echoing broader debates on the potential for AI to "spoon-feed" rather than challenge students (Aljuaid, 2024). Thus, educators must balance the affordances of AI with strategies that promote active, reflective learning.

### Theoretical Implications

The findings reinforce the utility of two core learning theories: cognitive load theory and constructivist learning. From a cognitive load perspective (Sweller, 1988), AI tools helped reduce extraneous load by translating dense textbook content into more accessible formats summaries, diagrams, or analogies. This allowed students to focus their mental effort on building germane cognitive structures essential for problem-solving in economics. From a constructivist perspective, the AI tools enabled autonomous inquiry, allowing students to explore hypothetical policy scenarios, challenge assumptions, and ask iterative "what-if" questions. These forms of dialogic learning are often limited in large Vietnamese classrooms but were made possible through personalized, on-demand AI interaction.

### Practical and Pedagogical Implications

The results provide strong justification for institutional investment in AI-enhanced pedagogies, particularly in foundational courses like Introduction to Economics, where student drop-out or disengagement can be high. Specific takeaways include Curriculum Design: Embedding AI tasks such as chatbot debates, co-writing exercises with ChatGPT, and adaptive quizzes can enrich the learning journey. Faculty Development: Teachers need training in prompt engineering, critical AI literacy, and the ethical use of AI in student assessment. Assessment Innovation: Traditional closed-book testing may no longer reflect actual student understanding in AI-assisted environments. Alternatives such as AI-aided essays, oral defenses, or peer-reviewed economic modeling may better align with emerging capabilities. Equity Considerations: The stronger performance among low-scoring and female students suggests AI may help narrow achievement gaps, particularly where confidence and access to private tutoring are lacking. At the same time, overreliance must be monitored. Students need to be guided to evaluate, question, and improve AI-generated responses, not passively consume them. This requires a meta-cognitive approach to AI use, where learners reflect on their interaction patterns and learning gains.

## LIMITATIONS

This study, while insightful, is not without its limitations. First, it was conducted within a single institution, which limits the generalizability of findings. Second, the six-month period may not be sufficient to capture long-term effects of AI integration, such as sustained motivation or transfer of learning to higher-order economic analysis.

Moreover, while AI tools were used ethically and transparently, the study did not track exact AI usage patterns per student (e.g., prompt history, engagement time), which may have enriched the analysis. Finally, the impact of language proficiency was not separately measured, even though AI's ability to explain economics in both English and Vietnamese likely influenced comprehension for bilingual learners.

### Future Research Directions

To build on this study's foundation, future research should consider Longitudinal Studies: Exploring how repeated AI usage affects economic reasoning over multiple semesters. Cross-disciplinary Studies: Comparing AI's effect in economics versus quantitative-heavy or qualitative-heavy subjects. Usage Analytics: Incorporating AI log data (e.g., ChatGPT session counts, query types) to correlate with performance. Ethical Frameworks: Investigating students' ethical stances toward AI-generated content and authorship in academic writing. These directions are especially relevant as generative AI continues to evolve and becomes embedded in learning management systems and national e-learning strategies across Southeast Asia.

# CONCLUSION

This study explored the pedagogical impact of AI-assisted teaching on students' comprehension and interest in Introduction to Economics at HUIT. By integrating tools such as ChatGPT, AI-generated case studies, and adaptive quizzes into a traditional curriculum, the study provided valuable insights into how artificial intelligence can enhance both the cognitive and affective dimensions of economics education. The findings revealed that AI-assisted instruction significantly improved students' comprehension of key economic concepts. Post-test scores showed notable gains, particularly in topics that involve abstraction and visualization, such as elasticity and supply-demand analysis. These results support existing literature on AI's capacity to reduce cognitive load and enhance conceptual clarity (Sweller, 1988; Chan et al., 2022). Furthermore, the study confirmed the utility of Vygotsky's (1978) Zone of Proximal Development in explaining how AI tools can act as learning partners, scaffolding students beyond their current capabilities. Student engagement and interest also increased significantly. Survey data indicated that students felt more motivated, curious, and confident in their understanding of economics when supported by AI tools. Focus group interviews revealed that AI provided a non-judgmental, responsive environment conducive to inquiry and experimentation particularly important in educational cultures where students may be hesitant to ask questions publicly. Importantly, the study demonstrated that AI can serve as a democratizing force in education. Students with lower prior performance and female students, in particular, showed greater learning gains and reported a stronger positive response to AI integration. This suggests that well-designed AI interventions can help close participation and achievement gaps often observed in traditional classrooms. Nevertheless, the study also highlighted the need for critical digital literacy. A small but notable proportion of students reported a tendency to rely on AI-generated answers without reflection, underscoring the importance of teaching students how to engage with AI thoughtfully and ethically.

As AI continues to permeate higher education, educators must shift from seeing it as a threat or shortcut to embracing it as a powerful tool for personalized, interactive, and inclusive learning. Institutions like HUIT have the opportunity to lead in Southeast Asia by developing AI-integrated curricula that balance automation with pedagogical integrity.

In summary, AI-assisted instruction when carefully embedded into course design can enhance comprehension, stimulate interest, and promote equitable outcomes in economics education. Future research should continue exploring longitudinal effects, disciplinary differences, and best practices for AI use to inform policy and curriculum design at national and international levels.

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