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GENERATIVE AI AS A TOOL FOR PROMOTING CRITICAL THINKING IN SECOND LANGUAGE EDUCATION

It is widely known that the rise of Generative Artificial Intelligence (GenAI) has significantly reformed second language education by introducing interactive, dialogic or instant feedback learning environments. The aim of the article is to examine the role of Generative AI in promoting critical thinking in second language acquisition (SLA), showing that its pedagogical value lies not in automated language production but in its capacity to stimulate higher-order cognitive engagement such as analysis, assessment or evaluation, and reflection. Taking into consideration some of the recent empirical studies, meta-analyses demonstrate that when systematically integrated into pedagogical design, Generative AI can enhance learners' capacity of critical thinking, cognitive awareness, and evaluative reasoning. However, global evidence also reveals risks of dependance, over-reliance and superficial engagement when AI is used without structured instructional guidance. The article concludes that Generative AI should be conceptualized as a "critical thinking amplifier" rather than a replacement for human cognition in language learning.

Key words: Critical thinking, generative, artificial intelligence, pedagogical, analysis, second language, acquisition.

Introduction

Second language education or second language acquisition has traditionally been accepted as communicative approaches that prioritize interaction, comprehension, and re-production of the language in everyday communication.

Theories such as Krashen's 'Input Hypothesis' (Krashen 1985), Swain's Output Hypothesis (Swain 1985), and Vygotsky's 'Sociocultural Theory' (Vygotsky 1987) emphasize that language learning is fundamentally a socially mediated cognitive process. However, these frameworks were developed in pre-digital learning environments where interaction was primarily human-to-human. The introduction of Generative AI systems such as large language models shapers as a structural shift in this landscape.

These systems imitate or stimulate human-like dialogue, generate contexts and responses based on the given questions, and provide instant feedback across multiple linguistic chains. International research increasingly shows or accepts that such tools are not just supplementary technologies but transformative cognitive environments for language learning. A 2025 scoping review of 43 empirical studies across SSCI journals (Yun Wang, Ting Zhang, Ling Yao 2025) confirms that Generative AI is now widely associated with personalization, learner independence, instant feedback, and the most importantly critical thinking development in SLA contexts.

Despite these benefits, the key pedagogical question is whether Generative AI develops learners' critical thinking or simply increases dependency or superficial efficiency of language acquisition. This article argues that AI fosters critical thinking only when learners are required to interrogate, explain, evaluate, and refine AI-generated outputs rather than passively accept them without any further clarification, evaluation regarding it.

Research Methodology

This study adopts a qualitative, conceptual, and literature-based research design to examine the role of Generative Artificial Intelligence (GenAI) in promoting critical thinking within second language acquisition (SLA). The methodological approach is grounded in document analysis and systematic interpretive synthesis of existing empirical studies, meta-analyses, and theoretical frameworks in applied linguistics, educational technology, and cognitive psychology.

The research does not involve primary data collection from participants; instead, it relies on secondary data sources, including peer-reviewed journal articles, international meta-analyses, scoping reviews, and theoretical publications published in SSCI-indexed journals and academic press books. The selected literature spans the period in which Generative AI and large language models have become prominent in education research, ensuring that the analysis reflects the most recent developments in the field.

A thematic analysis approach was employed to identify recurring patterns across literature. The reviewed studies were systematically examined and categorized according to three key analytical dimensions aligned with the objectives of the study: (1) the impact of Generative AI on second language learning outcomes, (2) its role in fostering critical thinking skills such as analysis, evaluation, and reflection, and (3) the risks and limitations associated with

unstructured or excessive AI use in educational contexts. This allowed for the synthesis of converging and diverging findings across different geographical and pedagogical contexts, including some parts of Europe, North America, and Asia.

To ensure academic rigor, only sources that met the following inclusion criteria were considered: (1) publication in peer-reviewed journals or reputable academic presses, (2) relevance to AI in education or SLA, (3) empirical or theoretical contribution to critical thinking or cognitive development, and (4) publication in English. Studies that focused solely on technical AI development without educational implications were excluded.

The analytical framework of the study is informed by Bloom's Taxonomy (1956), Krashen's Input Hypothesis (1985), Swain's Output Hypothesis (1985), and Vygotsky's Sociocultural Theory (1987). These theories provide the conceptual lens for interpreting how Generative AI may function as a mediating cognitive tool that supports higher-order thinking processes when integrated into structured pedagogical environments.

Finally, the synthesis process involved comparing findings across studies to identify global trends, pedagogical patterns, and contradictions in literature. This comparative approach enabled the study to develop a comprehensive understanding of how Generative AI influences critical thinking in SLA and under what conditions its educational benefits are maximized or limited.

Results

The analysis of international literature indicates that Generative AI has a generally positive impact on second language acquisition when used within structured and reflective learning environments. Through studies, learners demonstrate improved critical thinking skills, particularly in analysis, evaluation, and metacognitive reflection when they actively engage with AI-generated outputs.

Findings also show that the strongest cognitive benefits occur when students are required to critique, compare, and revise AI responses rather than use them passively for translation or task completion. However, evidence consistently highlights that unstructured use of AI can lead to over-reliance and reduced independent reasoning.

The results suggest that Generative AI enhances critical thinking in SLA only when it is guided by clear pedagogical strategies and active learner engagement.

Discussion

Critical thinking in language acquisition refers to the ability to analyze, evaluate linguistic choices, reflect on communication strategies, etc. From a cognitive point of view, it relates to higher-order thinking processes in Bloom's taxonomy—analysis, evaluation, and creation (Bloom, 1956).

Recent research shows that Generative AI creates a bit of a debate too. While it makes life easier by giving quick answers, which eases cognitive load, it can

also boost our understanding if used right. When people must check and compare AI results, they think more critically. According to a 2025 study on critical thinking in AI use, “verification, motivation, and reflection” are key parts of engaging with AI systems properly (Moorhouse, Wong, 2025). This shows that being critical isn’t just about seeing AI in action; it also depends on what users do and how they’re taught to interact with it. According to SLA theory, this fits well with sociocultural mediation. AI becomes an “external cognitive partner,” expanding the zone of proximal development, but only when learners actively evaluate it instead of passively consuming it.

Research shows that Generative AI can boost critical thinking in language learning if used right. In Hong Kong, studies in multilingual classes reveal that kids who use AI for writing get better at arguing clearly and logically. For instance, students asked to critique AI-generated work did way better than others in how coherent their arguments were and how well they supported them with evidence. This means that engaging with AI in a critical manner can be effective.

A study in China showed that university students engaged more with reflective thinking in AI-backed informal settings, especially when comparing AI responses to their own thoughts, not just accepting AI as correct. This means using AI for comparison ramps up brain activity more than treating it as an authority figure does (Wang, Zhang, Yao, 2025, pp. 30–40).

A meta-analysis of some studies shows that generative AI chatbots boost second language learning quite a bit. This happens especially when tasks involve reflection and evaluation by engaging actively instead of passive participation. It really stresses that the biggest benefit comes from training learners to critically check AI responses instead of just using them for translations or simple tasks (Sung, Chang & Yang, 2015, pp. 68–84) (Zawacki-Richter, Marín, Bond, M., & Gouverneur, 2019).

Across Europe and North America, emerging experimental research in higher education shows a contrasting trend: when students rely excessively on AI for task completion, their metacognitive effort and independent reasoning decrease. Studies published in major educational psychology journals indicate that unstructured AI use can lead to “metacognitive laziness,” where learners outsource thinking processes to AI systems, weakening critical reasoning skills over time (Kasneci, E., et al., 2019).

This international evidence reveals a consistent pattern: AI enhances critical thinking only when pedagogically controlled; otherwise, it risks weakening it.

Mechanisms Through Which AI Promotes Critical Thinking in SLA

The development of critical thinking through Generative AI happens via several ways. First, it presents learners with multi-variant output generation, so they see different possibilities for expressing the same idea. Unlike those strict textbooks with just one right answer, AI gives students several options to look at, compare, evaluate, and choose — this all naturally fires up their analytical reasoning.

Next, AI lets users question the outputs in what becomes an epistemic dialogue. Essentially, you can ask more questions and engage in this back-and-forth, turning your learning into a discussion rather than a one-way info dump.

Learners also need to stay vigilant because AI might spit out stuff that seems legit but isn't. So, developing verification strategies is key — this prepares them for the real world where meanings get hashed out and aren't always reliable.

Lastly, AI lets folks reflect on their own work by seeing how their writing stacks up against AI-generated content. Comparing tones, structures, and arguments helps them think about why they make certain choices with words.

All these methods don't directly teach critical thinking, but they do create situations where using it becomes a necessity.

Challenges and Risks in International Contexts

Despite promising evidence, international research also highlights significant limitations.

One major concern is cognitive offloading, where learners rely on AI to generate answers without engaging in analytical reasoning. Recent studies in educational psychology show that increased trust in AI correlates with reduced independent critical thinking and lower cognitive effort during learning tasks.

Another challenge is bias and pragmatic inaccuracy. Research in pragmatics has shown that AI systems often fail to produce culturally and contextually appropriate language, particularly in non-Western contexts. This introduces the risk of learners internalizing linguistically incorrect or culturally inappropriate patterns.

Additionally, differences in educational infrastructure across countries influence outcomes. In technologically advanced systems (e.g., Singapore, South Korea, Finland), AI is more effectively integrated into structured pedagogical models. In contrast, in contexts where teacher training in AI pedagogy is limited, AI use tends to remain superficial, focusing on translation and grammar correction rather than critical engagement.

Pedagogical Implications

International evidence shows that for Generative AI to boost critical thinking; we need structured teaching methods. Students should check different AI results, question why certain language choices were made, spot mistakes, and look at other possible views.

Teachers now guide this process instead of just giving info. They design activities where kids compare, judge, and think deeply about what they see. When done right, AI helps thinking, not just by providing answers.

Conclusion

As a conclusion, Generative AI marks a big step forward in second language education, but whether it boosts critical thinking depends more on how it's used rather than the tech itself. When we weave it into thoughtful lesson plans, students get to sharpen their analytical and eval skills while beefing up their language know-how. Instead of just parroting what AI spits out, learners compare and critically quiz these outputs, helping them become stronger thinkers overall.

Yet, studies show that using AI without direction might make students overly reliant on it, shrinking their chances to think independently and grapple with the material. Teachers play a key role here—guiding students through tasks where they critically judge the AI stuff is vital.

So, when guided right, generative AI can really amp up critical thinking in L2 learning. Still, for this to happen, educators need to craft lessons that challenge minds and teach kids how to critically hit back and forth with AI-generated stuff. We've got lots more to discover about how this impacts long-term brain growth and language skills, too, making further study crucial across all schooling situations.

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**ԳԵՆԵՐԱՏԻՎ ԱՐՀԵՍՏԱԿԱՆ ԲԱՆԱԿԱՆՈՒԹՅՈՒՆԸ ՈՐՊԵՍ
ՔՆՆԱԴԱՏԱԿԱՆ ՄՏԱԾՈՂՈՒԹՅԱՆ ԽԹԱՆՄԱՆ ԳՈՐԾԻՔ
ԵՐԿՐՈՐԴ ԼԵԶՎԻ ՈՒՍՈՒՑՄԱՆ ՄԵՋ**

Գեներատիվ արհեստական բանականության (ԳԵՆԱԲ) ի հայտ գալը զգալիորեն բարեփոխել է երկրորդ լեզվի կրթությունը՝ ներդնելով ինտերակտիվ, երկխոսական կամ ակնթարթային հետադարձ կապի ուսուցման միջավայրեր: Հոդվածի նպատակն է ուսումնասիրել գեներատիվ արհեստական բանականության դերը երկրորդ լեզվի յուրացման, քննադատական մտածողության խթանման գործում՝ ցույց տալով, որ դրա մանկավարժական արժեքը կայանում է ոչ թե ավտոմատացված լեզվի արտադրության, այլ բարձր կարգի ճանաչողական ներգրավվածությունը խթանելու կարողության մեջ, ինչպիսիք են վերլուծությունը, գնահատումը կամ վերլուծումը և արտացոլումը: Հաշվի առնելով վերջին փորձարարական ուսումնասիրություններից մի քանիսը, մետա-վերլուծությունները ցույց են տալիս, որ մանկավարժական գործընթացի մեջ համակարգված կիրառման կամ ինտեգրման շնորհիվ գեներատիվ արհեստական բանականությունը կարող է բարելավել սովորողների քննադատական մտածողության, ճանաչողական իրազեկության և գնահատողական դատողության կարողությունները: Այնուամենայնիվ, համաշխարհային ուսումնասիրությունները նաև բացահայտում են կախվածության, չափազանց վստահության և մակերեսային ներգրավվածության ռիսկերը, երբ արհեստական բանականությունն օգտագործվում է առանց կառուցվածքային ուսուցողական ուղղորդման: Հոդվածը եզրակացնում է, որ գեներատիվ արհեստական բանականությունը պետք է հասկացվի որպես «քննադատական մտածողության խթանիչ», այլ ոչ թե որպես լեզվի ուսուցման մեջ մարդկային գործոնի փոխարինող:

Հիմնաբառեր. քննադատական մտածողություն, գեներատիվ, արհեստական բանականություն, մանկավարժական, վերլուծություն, երկրորդ լեզու, յուրացում:

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ГЕНЕРАТИВНЫЙ ИСКУССТВЕННЫЙ ИНТЕЛЛЕКТ КАК ИНСТРУМЕНТ РАЗВИТИЯ КРИТИЧЕСКОГО МЫШЛЕНИЯ В ОБУЧЕНИИ ВТОРОМУ ЯЗЫКУ

Широкое внедрение генеративного искусственного интеллекта (GenAI) значительно трансформировало методику обучения второму языку, обеспечив создание интерактивной, диалоговой среды обучения с мгновенной обратной связью. Цель данной статьи заключается в исследовании роли генеративного ИИ в развитии критического мышления в процессе овладения вторым языком (SLA), показывая, что его педагогическая ценность заключается не в автоматическом создании языковых высказываний, а в способности стимулировать когнитивную деятельность высшего порядка, такую как анализ, оценка и рефлексия.

С учетом современных эмпирических исследований и метаанализов, установлено, что при систематической интеграции в педагогический процесс генеративный ИИ может развивать у обучающихся критическое мышление, когнитивную осознанность и навыки оценочного суждения. Однако международные данные также выявляют риски зависимости, чрезмерного использования и поверхностного обучения при отсутствии структурированного педагогического сопровождения. В статье делается вывод, что генеративный ИИ следует рассматривать как «усилитель критического мышления», а не как замену человеческого мышления в процессе изучения языка.

Ключевые слова: критическое мышление, генеративный, искусственный интеллект, педагогика, анализ, второй язык, овладение языком.

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Հոդվածը հանձնվել է գրախոսման՝ 2026թ. ապրիլի 10-ին:

Հոդվածն ընդունվել է տպագրության՝ 2026թ. ապրիլի 29-ին: