European Journal of Philosophical Research. 2026. 13(1)
E-ISSN: 2413-7286
Volume-13/Issue-1/2026

Evaluating EFL Learner Agency and Critical Literacy during AI-assisted Comprehension and Production Tasks

Khadidja Ghouraf
Oran 2 University, Algeria
Khadidja.gouraf@gmail.com

Soumission : 04/01/2026 Acceptation : 29/05/2026. Publication08/06/2026 :

Abstract
This mixed-methods pilot study investigates the interdependence of learner agency and critical AI literacy among 109 university EFL students across comprehension and production tasks. It evaluates whether learners actively use generative AI as a "Constitutive Digital Other" to scaffold learning, or passively default to a "Subordinate Surrogate". Behavioural observations and performance data reveal a severe decline in cognitive agency during AI interaction; notably, 62.4% of participants outsourced written production entirely to automated generation. Only a small fraction demonstrated the critical literacy required to actively modify prompts or detect errors. This uncritical, passive reliance engenders high levels of deceptive proficiency among students, resulting in strong formative scores that fail to yield summative academic performance. Consequently, the findings highlight the importance of self-regulated learning for learners to progress from automation to agency.
Keywords: generative AI, critical AI Literacy, learner agency, constitutive digital other, subordinate surrogate, TEFL

1.Introduction

The integration of generative artificial intelligence (AI) into Teaching English as a Foreign Language (TEFL) has manifested as a pervasive disruption, drastically altering not only analog pedagogies but also English learning behaviours. As such, learners' engagement is increasingly fluctuating between interacting with AI tools as a Constitutive Digital Other—a dialectical scaffold that ensures deep cognitive engagement, a user-focused atmosphere, and authentic discursive fluency—and defaulting to them as a Subordinate Surrogate, which risks severe cognitive outsourcing. This dichotomy calls for an in-depth analysis of how AI-assisted language education impacts learner autonomy and cognitive and metacognitive awareness, in addition to the rigorous evolution from mechanical foundations to general active communicative competence.

The present holistic classroom case study investigates the intersection of learner agency and critical AI literacy in EFL contexts. It addresses two central questions and proposes tentative hypotheses:

- **Research Question 1:** How much personal control (agency) do EFL students maintain over their learning when using AI to understand language (comprehension) versus when using it to create language (production)?
- **Research Question 2:** How do students demonstrate critical literacy (such as questioning AI or detecting its mistakes) during these tasks, and does it helps them perform better?
- **Research Hypothesis 1:** Students will show less personal agency during writing tasks (production) than during reading or listening tasks (comprehension), meaning they will rely more on automated generation.
- **Research Hypothesis 2:** Students who show higher critical literacy by actively checking and modifying AI output will perform significantly better on their language tasks than those who exhibit passive reliance.

2. Theoretical Framework

2.1. Critical Digital literacy in Educational Contexts

From the age of oratory to that of reading and writing, then to media and multimedia, and finally to the age of Information and Communication Technologies (ICTs), literacy has evolved to now concern other trends and concepts. In this context, every new emerging tool requires more updated and advanced competencies and strategies (Department of eLearning, 2015). Indeed, with the prevalence of AI, the concept of digital literacy has expanded to include not only automated usage but also active and interactive prompting. Technical know-how, therefore, is not the objective; rather, it is critical abilities, encompassing, for instance, the detection of cultural nuances, political biases, misleading content and hallucinations, and understanding data privacy, AI limitations, etc.

Starting with general digital literacy, researchers have defined the concept in multiple ways and from different perspectives, but they all share common thematic threads. According to Lankshear & Knobel (2008), digital literacy is mainly an adaptation of skills to a given new medium, and to match it "to the kind of information we are presenting and to the audience we are presenting it to." The Department of Education and Communities (2012) views digital literacy not only as technological know-how but also as an ability "to act safely and respectfully online." Bawden (2008) further relates it to "the awareness, attitude, and ability" that involves a complex process, which aims, in turn, to enable "constructive social action." In this regard, (Eshet-Alkalai 2004, as cited in Osterman, 2012) claims that digital literacy should involve the following type of skills: technical-procedural, cognitive, and emotional-social which alternatively represent functional, analytical and relational abilities of users. Digital literacy is, therefore, a multifaceted critical competence, which goes through a dynamic process of

cognitive and communicative awareness to align with the ethical and contextual requirements of digital environments.

In highly technology-driven settings as universities, digital literacy is of utmost importance. However, despite the fact that educational practitioners are increasingly emphasising the integration of digital and online tools into teaching, younger learners are still struggling with critical thinking skills. Most learners are considered tech-savvy, while their roles are often limited to passive consumption of e-content. E-safety Support (2014) asserts that digitally literate individuals are expected to communicate and demonstrate diligence. Success can mainly be achieved with knowledgeable collaborators who combine functional and analytical skills with relational abilities, especially in formal educational settings where communication and interaction are prerequisites. In this regard, digital literacy is a paramount "graduate skill" in several teaching and research areas, unlocking job opportunities and widening future perspectives (Deakin University, 2013). Moreover, without essential digital skills, younger students will not only struggle to socially interact, but will also be unable to engage in "democratic participation" and be integrated into democratic and collaborative decision-making processes (Department of eLearning, 2015).

In postdigital goal-oriented education, critical citizens, who aim to develop cognitive skills and acquisition potential, should not uncritically adopt emerging technologies. The role of critical analysis for educators and learners is increasingly emphasised, because even when we are able to use technology, we still have less power and control over the tech-driven global economy. As Jandrić et al. (2018: 4) put it, "To be on the 'worse end' of the 'digital divide' does not mean that you live an entirely 'analogue' life, unaffected by the encroachments of digitisation. Rather, it means that you have less agency in the digital era and that you are undoubtedly impacted to a greater extent by a technology-infused global capitalism."

In order to fully understand digital literacy, we must look at its multifaceted, evolving nature. As mentioned above, it moves beyond mere ICT proficiency, combining students' existing background knowledge with other digital competencies, including critical analysis, synthesis, creation, and communication, without neglecting ethical considerations (Bawden, 2008, as cited in Deakin University, 2013). Indeed, the progression toward digital literacy requires going through deliberate stages of information literacy, which guide students from the initial recognition and identification of information needs through to the rigorous evaluation, organization, and purposeful use of that knowledge (Bawden, 2008, as cited in Belshaw, 2011). Overall, this perspective views digital literacy not as a set of static abilities, but as an ongoing and recursive process—a reality that now necessitates a shift toward understanding AI literacy as the next critical frontier in modern education.

AI has put precipitate pressure on teachers and learners to update their digital literacy skills. However, many issues are hindering the process, namely cognitive ones.

Evidence indicates that habitual AI reliance may cause cognitive atrophy by impairing essential memory encoding and critical reasoning skills. In addition, the pervasive integration of AI tools threatens to diminish our focusing capacities and fosters a state of "neural evidence of skill atrophy." It even contributes to a homogenization of human thought and creative expression, together with the psychosocial risks of dependency and social isolation. These factors collectively challenge intellectual autonomy and exacerbate matters of agency (Baxter, 2026).

In his study on ChatGPT's impact on long-term knowledge retention, Barcaui (2025) explains how, in an unprecedented way, enthusiasm and concern wrestle in the arena of higher education, causing significant cognitive costs. He, thus, advocates for educational reforms that value deep cognitive engagement and knowledge retention while integrating AI into education, saying, "This means using AI to complement, not replace, challenging learning activities, avoiding scenarios where the AI becomes a mere cognitive crutch. In the age of AI, the core principles of human learning are not outdated; in fact, they are more important than ever to uphold."

2.2. AI-assisted language learning

Integrating AI into educational settings has accelerated the pace of the inevitable reassessment of learning and teaching methods. As such, it is crucial to adopt a sound pedagogical agenda when evaluating learner's critical literacy in order to make a flexible transition from what Jose et al. (2025) consider as eroded agency to enhanced agency. AI, therefore, must be deliberately integrated into the curriculum with the aim of supporting both receptive and productive language skills, and moving students from a passive state to being active and then interactive.

The "pedagogical tension" identified by Mokhtari and Ghimire (2026) between "cognitive scaffolding" and "cognitive outsourcing" is indeed noteworthy. According to their study on AI-assisted reading, there is great potential for a learner's zone of proximal development to be scaffolded when they deal with complex texts. However, they maintain that the instructional risk of cognitive outsourcing is evident in students who rely on AI, causing them to neglect the productive journey toward lifelong learning. The study also confirmed that tools which provide instant interpretations may encourage students to avoid strategic reading processes, leading to a reduction in metacognitive regulation and thus diminished text engagement.

Observing student performance in AI-assisted reading and listening tasks confirms the complexity of audio and texts which must not be denied. However, AI's instant feedback feature is an advantage that ameliorates the quality of the generated prompts and helps with comprehension. As the Department of eLearning (2015) notes, digital reading introduces new dimensions and requires the interpretation of visual symbols and images together with traditional text. This is, in fact, a multimodal setting, where students must act as metacognitive readers who "set purposes for reading, select appropriate strategies to use when reading, track their comprehension in real time, and adjust their

reading strategies when they encounter challenges or confusions" (Zohar & Barzilai, cited in Mokhtari & Ghimire, 2026). With AI's integration, students have become, more than ever before, well-assisted by a dialectical partner at any time while reading or listening, and in any setting (inside or outside classroom confines). This helps them revisit any stage and interactively type different generic commands to their chatbots, or ask for targeted support to achieve full understanding.

In terms of AI-assisted language production, AI's impact remains undeniable. Some students may only passively rely on it as a ghost-writer that generates, for instance, ready-made essays; others, however, may consider it as additional supportive tool to improve their cognitive and writing skills. In this context, Tran et al. (2025) argue that, within a social constructivist framework, generative AI can act as a tutor, a peer, or a modern digital alternative to the "more knowledgeable other" that can "simulate the benefits of social interaction," contrary to the assertion of some scholars that artificial systems cannot completely surrogate authentic human interaction. To better conceptualise the exact nature of AI assistance in language education and define the type of learners' engagement with such simulation, proposing two other tentative alternative concepts is deemed necessary. Depending on how a student interacts with AI, the tool acts either as a Constitutive Digital Other (CDO) or a Subordinate Surrogate. Firstly, operating as a CDO means providing a dialectical scaffold that enhances complex language production tasks and actively supporting the iterative, non-linear process of drafting, revising, and editing. On the other hand, if the AI's role is relegated to a Subordinate Surrogate, learners lean toward cognitive outsourcing. This negative dynamic would certainly lead to the neglect of the careful cognitive effort required to master deep text comprehension and achieve authentic discursive fluency.

Emphasising the necessity of positive AI scaffolding, Mokhtari and Ghimire (2026) add, "Technology alone does not guarantee learning gains; rather, progress emerges from the interaction among tools, teaching practices, and students' strategic engagement with texts." Clearly, they view "instructional design" and "teacher mediation" as essential passageways between AI tools and the development of metacognitive awareness. This is crucial not only for reconsidering pedagogical reforms but also for valuing other significant considerations of equity, ethics, and instructional risks. These include the unavailability of opportunities to access technological tools—mostly for the marginalised—data privacy, transparency, surveillance, and the negative way AI is integrated into learning. Only by bringing everything together can sketchy passive learning and "overreliance on automated outputs" be avoided (Mokhtari & Ghimire, 2026).

As Semerikov et al. (2021) point out, the shift toward AI-assisted Language Education (AILE) demands a shared, multi-stakeholder commitment. Educators are tasked with accepting these tools and continually adapting their pedagogy, while learners must take the initiative to use AI to personalise their own intercultural development. This,

however, relies heavily on broader external support: researchers need to consistently use rigorous methodologies to evaluate technology integration, and policymakers must facilitate the entire process by providing the essential funding, clear standards, and quality assurance guidelines required for sustainable integration (Semerikov et al., 2021).

Overall, navigating the complex reality of AI in language education necessitates reflecting on pedagogies. Indeed, educators can successfully facilitate learners' transition toward AI literacy and counteract cognitive outsourcing by promoting vigorous metacognitive awareness. This guides them to engage with the new technologies as a Constitutive Digital Other rather than defaulting to a Subordinate Surrogate.

3. Methodology

Based on a triangulated behaviour-and-performance-driven framework, this pilot study investigates the use of generative AI by one hundred and nine EFL second year university students (N = 109) during classroom comprehension and production tasks, aiming to assess their agency in AI-assisted education and identify their AI literacy level. The population, however, consisted of three hundred and eighteen EFL students (studying in Oran 2 University in Algeria), among whom the first target sample size represents approximately 35% and mostly has a B2 level in English.

Data collection employs a mixed-methods approach, combining behavioural observations and performance data. Specifically, they represent a real-time classroom observation protocol tracking student AI prompting habits and verification behaviours during oral comprehension tasks, in addition to a performance instrument evaluating their reading comprehension and subsequent written production after integrating AI use in the classroom.

The content of the subject matters instructed covered a range of specialised and varied themes (e.g., *medical misogyny, cybercrime, mental disorders, the fast fashion industry, the oil shock paradox, etc.*). This was a reflection of the diverse learning interests of second-year students who were still studying general English; modules included linguistics and phonetics, research methodology, grammar, reading comprehension, oral comprehension practice, written comprehension and expression, civilisation, literature, French, and ICTs.

The procedure involved engaging in discussions on a given topic or providing a reading material during each session. In oral comprehension, for instance, participants were instructed to watch a video or listen to audio materials about a given topic, and then they used AI generator apps—such as ChatGPT, Claude AI, DeepSeek, Perplexity AI or Gemini as they mentioned—to generate answers for topic-related questions after brainstorming but not finding satisfactory answers. Meanwhile, we observed their interactions and prompting behaviours. Subsequently, we would ask them to compare their previous answers to the ones generated by AI apps to determine whether the prompts included reliable or unbiased information.

The study aimed to assess how students actively manage AI tools and monitor comprehension during and after material presentation. Additionally, it sought to determine whether they activate their critical thinking or passively accept any generated prompt, to identify whether AI serves as a learning scaffold, which boosts their cognitive and metacognitive skills, or merely an automation shortcut that renders them passive and reliant on the AI tool, preventing them from taking responsibility for their own learning.

Practically, students' interactions with AI tools were observed and coded in real time, not only via checklists; but also through supplementary field notes to capture specific narrative data for analysis. Field notes included moments of high or low agency when learners experienced linguistic frustrations or were able or unable to detect any cultural nuances or political biases, misleading generated content, and the like. This was followed by the collection and grading of their written test scripts, which were expected to reinforce the observational protocol.

Using descriptive statistics, quantitative data—including written and spoken test scores and checklist behavioural frequencies—were analysed to find correlation trends, while qualitative observation notes underwent thematic analysis with the purpose of monitoring the learners' level of AI literacy, thus casting light upon active scaffolding and passive reliance.

3. Data Collection and Analysis and Limitations

3.1. Analysis and Discussion of Oral Comprehension Results

In this section, we provide the mixed-methods analysis of the year-long pilot study involving 109 second-year EFL university students. Derived from a three-part observation grid, triangulated data are combined with the results of summative assessments conducted over two semesters to address the main research questions.

3.1.1. Statistics of Behavioural Frequencies

The table below outlines learners' behavioural frequencies observed during the oral comprehension module, which covered several topics.

Checklist Dimension	**Behavioral Indicator**	**Quantitative Frequency / Student Metric (N = 109)**
Scaffold Interface	Active Prompting	15 students (13.8%) per session
	Iterative Prompting	6 students (5.5%) per session
	Pace Control (Pausing)	4 students (3.7%) Rarely observed
Evaluation Phase	External Cross-Checking	2 students (1.8%) Rarely observed

	Peer/Teacher Consultation	58 students (53.2%) per session
	Scepticism & Error Detection	1 student (0.9%) Rarely observed
	Correcting the AI	0 students (Never)
Human Element	Independent Task Attempt	48 students (44.0%)
	Active Note-Taking	20 students (18.3%)
	AI Translation Request	0 (0%) No clear evidence (Preferred teacher)

- **Semester 1 Oral Test Scores:** Ranged from **06.50/20** to **15.00/20**
- **Semester 2 Oral Test Scores:** Ranged from **05.00/20** to **17.00/20** *(Note: Lower scores strongly correlated with student absenteeism rather than tool usage).*

3.1.2. Discussion of Findings of Behavioural Frequencies

- **Research Question 1 on Agency**

The data reveals a constant tension between student autonomy and passive reliance. As a matter of fact, their cognitive agency was estimated to be moderate, since up to 48 students representing (44.0%) were recorded attempting to solve comprehension questions on their own before turning to their chatbots. However, the level of agency rapidly declined during tool interaction.

With regard to "automation" vs. "scaffolding", most learners settled on, possibly unconsciously, the former. This was evident when they appeared satisfied with merely copying or reading prompts as they were generated, while ignoring linguistic engagement. A minority of 15 students (13.8%), nevertheless, maintained interface agency by editing prompts or even reformulating detailed, personalised ones rather than just copying a single generic command.

The "illusion of competence" was also traced during the analysis phase. Students frequently claimed complete understanding of the discussed topics based on AI summaries. However, when the teacher enforced an AI-free environment at the end of sessions by asking follow-up questions, answers and even behaviours revealed passive listening. The role of generative AI, therefore, shifted from an assisting tool; which

scaffolds learning to a mechanical servant or a cognitive crutch—sometimes even a metacognitive one—which makes comprehension rather opaque.

- **Research Question 2 on Critical Literacy**

Testing the level of AI literacy among participants, results revealed that the majority displayed total blind trust in their chatbots and instant acceptance of the prompts they generated. Clear evidence of their low critical literacy level is demonstrated in two main metrics. The first was that students never attempted to argue with AI outputs or correct them, and the second confirms their rare detection of systemic hallucinations, misleading generated content, cultural nuances, or political biases, even though these situations occurred frequently throughout the academic year.

3.1.3. Field Note Insight

It is worth mentioning that students mostly defaulted to traditional, human-dependent verification, as around 58 (53.2%) among them routinely turned to peers or the teacher to resolve overwhelming keywords. This would have been considered positive if it had been related to active and interactive prompting, or if they had cross-checked with encyclopedias or dictionaries themselves.

Then again, students who lacked the vocabulary to write nuanced prompts could not extract high-quality or unbiased support from their AI chatbots which made their linguistic frustration act as a barrier to their critical thinking.

Ultimately, the final test outcomes confirmed that high-achieving students naturally paired high critical thinking with an advanced capacity to act independently which improved both their speaking and listening skills. Thereby, they drove the top Semester 2 scores up to **17/20**. On the other hand, lower-performing students maintained low AI literacy and a passive reliance, failing to improve their oral skills.

3.2. Analysis and Discussion of Reading and Writing Results

- **Research Question 1 on Agency**

Students' control over the subject matter's content and goals, together with their control over the AI-assisted tasks, varied significantly depending on the task type. For instance, during the reading module, students were allotted much time to monitor their understanding, and they usually completed their assignments simultaneously, which left more time for feedback and corrections. This helped them perform generally better than in the oral module. Nevertheless, true cognitive abilities were still affected. Meanwhile, on average, 42 students (38.5%) sought AI for ready-made summaries or direct answers to assignment questions, thereby completely bypassing the text.

With regard to written production, students' linguistic agency almost collapsed. Up to 68 students (62.4%) relied on AI as a text generator, not a temporary scaffold. They, thus, submitted nearly flawless formative homework full of repetitive, recognisable AI phrasing. In addition, a distinct phenomenon emerged where students wrote introductions and conclusions themselves in order to give an impression of personal authorship but left the body paragraphs to AI's style.

- **Research Question 2 on Critical Literacy**

During receptive reading tasks, 18 students (16.5%) showed interface agency, which involves actively modifying prompts to clarify complex texts. In addition, roughly 15 students (13.8%) per session successfully detected AI misinterpretations of textual nuances. These results revealed that critical AI literacy was observed only in a small, consistent minority.

In productive writing tasks, however, the number of unaware and passive students narrowed further. Only about 14 (12.8%) among them per session demonstrated a degree of critical awareness, for they rejected AI-suggested vocabulary that appeared unnatural, complicated, or changed the meaning they intended to convey. Notably, these specific students were the only ones who considered AI as an interactive coach and editor rather than an automated author.

Final grades took into account summative tests, formative assignments, and classroom participation, meaning that students had several opportunities to compensate for any bad grades. However, even when they easily generated flawless homework, their limited independent proficiency was clearly reflected at the end of each semester when the grades were displayed. Therefore, the scores for Semester 1 ranged from 06/20 to 15.25/20, yet Semester 2 scores to some extent declined, ranging from 05.75/20 to 14/20.

To sum up, the passive reliance of students on automation at the expense of their autonomy widened the gap between their formative homework and actual linguistic competence. Remarkably the illusion of competence fostered by undue AI reliance failed to translate into improved summative performance. The highlight is that only a small fraction of critically literate students effectively bridged the gap between AI assistance and language acquisition.

Several logistical and pedagogical challenges affected this study. Classrooms were not digitally equipped or connected to the internet, which required learners to rely on their smart phones and mobile hotspot tethering. Usual acoustic hindrances in a populated classroom included the malfunctioning of microphone use, as ambient noise caused chatbots to misinterpret inputs, and students occasionally struggled to understand the AI's audio responses. Finally, late submissions of formative coursework delayed grading and, thus, data analysis; this sudden accumulation of assignments prior to summative evaluations resulted in an overwhelming workload for the instructor.

4. Conclusion

In sum, this study confirms that the integration of generative AI into EFL classrooms does not necessarily guarantee linguistic development; rather, it introduces a decisive instructional turning point. The findings demonstrate that passive reliance—where students use AI as a mechanical agent—effectively disguises their true learning abilities. Alternatively, interactive learners who use the tool as a dialectical scaffold usually manifest critical agency and self-regulated learning. Transcending the reliance on automated output to achieve the intended learning goals requires, therefore, prioritising

metacognitive regulation over automated convenience to avoid potential AI integration risks. However, the ultimate challenge for TEFL practitioners nowadays, with AI assistance, is to foster a human-centric educational ecosystem that coordinates pedagogical strategy, philosophical integrity, and technical implementation to uphold sustainable intellectual autonomy.

References:

1. Barcaui, A. (2025). ChatGPT as a cognitive crutch: Evidence from a randomized controlled trial on knowledge retention. *Social Sciences & Humanities Open*, *12*, Article 102287. Retrieved from: https://doi.org/10.1016/j.ssaho.2025.102287
2. Bawden, D. (2008). Origins and concepts of digital literacy. In C. Lankshear & M. Knobel (Eds.), *Digital literacies: Concepts, policies and practices* (pp. 17–32). New York: Peter Lang Publishing.
3. Baxter, A. (2026). *The cognitive costs of artificial intelligence* [Online forum post]. Effective Altruism Forum. Retrieved from: https://forum.effectivealtruism.org/posts/QYd9QHnPqwKuWyKht/the-cognitive-costs-of-artificial-intelligence
4. Belshaw, D. A. J. (2011). *What is 'digital literacy'? A pragmatic investigation* [Doctoral thesis, Durham University]. Durham E-Theses. Retrieved from: https://etheses.durham.ac.uk/id/eprint/3446/
5. Deakin University. (2013). *Digital literacy* [Teaching resource]. Deakin University Library.
6. Department of Education and Communities. (2012). *Digital literacy skills and learning report: A report on teaching information and communication technologies in initial teacher education in NSW*.
7. Department of eLearning. (2015). *Digital literacy: 21st century competences for our age: The building blocks of digital literacy: From enhancement to transformation*.
8. E-safety Support. (2014). *What every teacher needs to know about digital literacy* (Issue No. 2). Retrieved from: https://www.boa-academy.co.uk/attachments/download.asp?file=4451&type=pdf
9. Eshet-Alkalai, Y., & Chajut, E. (2009). Changes over time in digital literacy. *Cyberpsychology & Behavior, 12*(6), 421-429. In Osterman, M. D. (2012). Digital literacy: Definition, theoretical framework, and competencies. In M. S. Plakhotnik, S. M. Nielsen, & D. M. Pane (Eds.), *Proceedings of the 11th Annual College of Education & GSN Research Conference* (pp. 135-141). Miami: Florida International University. Retrieved from: https://www.semanticscholar.org/paper/Digital-Literacy%3A-Definition%2C-Theoretical-and-Osterman/5112d7be3afc3323c8e36c3fde1268c9f17b91ed

10. Jandrić, P., Ryberg, T., Knox, J., Lacković, N., Hayes, S., Suoranta, J., Smith, M., Steketee, A., Peters, M., McLaren, P., Ford, D. R., Asher, G., McGregor, C., Stewart, G., Williamson, B., & Gibbons, A. (2018). Postdigital dialogue. *Postdigital Science and Education*, *1*(1), 1–25. Retrieved from: https://doi.org/10.1007/s42438-018-0011-x
11. Jose, B., Cherian, J., Verghis, A.M., Varghise, S.M., and Joseph, S. (2025). The cognitive paradox of AI in education: between enhancement and erosion. *Front. Psychol.* 16:1550621. doi: 10.3389/fpsyg.2025.1550621. Retrieved from: https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1550621/full
12. Lankshear, C., & M. Knobel (2008.), *Digital literacies: Concepts, policies and practices*. New York: Peter Lang Publishing.
13. Mokhtari, K., & Ghimire, N. (2026). AI-supported reading comprehension across disciplines. *Encyclopedia*, *6*(3), 56–67. Retrieved from: https://doi.org/10.3390/encyclopedia6030056
14. Semerikov, S. O., Striuk, A. M., & Shalatska, H. M. (2021). AI-assisted language education: critical review. *Educational Dimension*, *4*, 1–7. Retrieved from:https://www.researchgate.net/publication/373442720_AI-assisted_language_education_critical_review
15. Tran, M., Balasooriya, C., Semmler, C., & Rhee, J. (2025). Generative artificial intelligence: the 'more knowledgeable other' in a social constructivist framework of medical education. *npj Digital Medicine*, *8*(1), 430. Retrieved from: https://doi.org/10.1038/s41746-025-01823-8