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*Corresponding author

Naleen Hassan Tatar
naleen.tatar@su.edu.krd

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Enhancing Critical Thinking Skills among EFL Students at Salahaddin University-Erbil: The Role of AI

Naleen Hassan Tatar/Department of English, College of Education, Salahaddin University-Erbil, Kurdistan, Iraq.

Asma Abbas Brime/Department of English, College of Education, Salahaddin University- Erbil, Kurdistan, Iraq

Abstract.

This study investigates the extent to which (EFL) teachers at Salahaddin University-Erbil can develop their' Critical thinking by using AI tools. That is, the more people accept the use of AI in education, the more need to evaluate its influence on students' cognitive growth. The study is a qualitative piece of research using semi-structured interviews that were piloted with 18 (EFL) teachers from three different colleges, looking at four key areas: the efficacy of AI in promoting critical change, popular AI tools, the realization problems and the return-for improvement The findings reveal that, when applied strategically, AI tools—such as grammar correction platforms and content generation applications—can support the development of critical thinking and learner autonomy. However, several obstacles were identified, including insufficient teacher training, inconsistent internet access, digital illiteracy, and unethical use of AI-generated content. To ensure ethical and pedagogically effective integration of AI in EFL instruction, the study recommends professional development initiatives, cultural contextualization of AI tools, and deliberate application of AI in ways that stimulate higher-order thinking.



About the Journal

Zanco Journal of Humanity Sciences (ZJHS) is an international, multi-disciplinary, peer-reviewed, double-blind and open-access journal that enhances research in all fields of basic and applied sciences through the publication of high-quality articles that describe significant and novel works; and advance knowledge in a diversity of scientific fields. <https://zancojournal.su.edu.krd/index.php/JAHS/about>

List of Abbreviations

| Abbreviations | Full Form |
|---------------|---|
| AI | Artificial Intelligence |
| EFL | English as a Foreign Language |
| Chat GPT | Chat Generative Pre-Trained Transformer |
| LL | Language Learning |
| JISC | Joint Information Systems Committee |
| Grammarly | AI-powered writing assistant |

1. Introduction

1.1 Background

Recent advancements in computer science, particularly in the field of Artificial Intelligence (AI), have had a profound impact on language learning. Nowadays, English as a Foreign Language (EFL) teaching increasingly involves the widespread use of adaptive learning resources such as Duolingo, alongside AI-supported platforms like ChatGPT and Grammarly. These tools assist in language acquisition by enabling learners to interact, receive immediate feedback, and access guided support. However, there is still ongoing debate within the academic community regarding the effectiveness of these technologies in fostering higher-order thinking skills—such as analysis, evaluation, and logical reasoning—which are essential for developing critical thinking.

The present study, conducted within a qualitative research paradigm, employed semi-structured interviews with English instructors at Salahaddin University-Erbil to explore how AI tools are being integrated into EFL instruction and how they influence students' critical thinking development.

1.2 Problem Statement

Studies examining the effectiveness of digital and AI-enabled tools in fostering students' critical thinking skills have not yet been conducted, although such recourses are increasingly widespread in EFL classrooms. Educators worry that letting AI do too much content-creating will stifle students' ability to conduct independent research, compile knowledge, and present strong, original arguments. This study aims to address this gap by exploring how AI-based instructional tools intersect with cognitively mediated instruction and contribute to the development of critical thinking among EFL learners. Although Shareef's (2024, pp.321-333) study on the effect on students' use of grammar among Kurdish EFL learners, relatively little has been done on the role of these tools in improving critical thinking skills in learning wider languages.

1.3 Research Questions

The following research questions guide this study:

1. What types of AI-powered digital tools are most commonly used by EFL instructors at Salahaddin University-Erbil?
2. In what ways do these tools influence the development of critical thinking skills among EFL learners?
3. This question is addressed through qualitative methods, specifically by analyzing instructors' perceptions gathered via semi-structured interviews. Critical thinking development is explored through reported changes in learners' analytical, evaluative, and reflective engagement during the use of AI tools.
4. What are the primary challenges faced in implementing AI tools within EFL classroom settings?

1.4 Objectives of the Study

- 1-Identify and document the digital and AI-powered technologies used in EFL instruction at Salahaddin University-Erbil.
- 2-Examine the perceived impact of these tools on learners' critical thinking abilities.
- 3-Explore the systemic and practical barriers that affect the effective integration of these technologies in EFL classroom environments.

1.5 Significance of the Study

This study contributes to the broader discourse on technology-enhanced language learning by examining the cognitive implications of integrating AI tools into EFL instruction. The findings may serve as a valuable reference for curriculum developers, educators, and policymakers seeking to strike a balance between the use of digital technologies and fostering learners' critical thinking and intellectual development.

2.Literature Review

2.1 The Background of AI:

Although Artificial Intelligence (AI) is widely acknowledged, its scope is often misunderstood. Popular media representations have led many to associate AI primarily with humanoid robots (Brookings Institution, 2024). While robotics—a branch of AI focused on machines that can interact with their environment—is a major research area, AI encompasses a much broader set of technologies and functions. Some scholars advocate for the term “augmented intelligence” rather than “artificial intelligence” to avoid the misleading notion that AI systems replace human cognition. Instead, this alternative complex data analysis and pattern recognition (Holmes, Bialik, & Fadel, 2019). Despite this, “artificial intelligence” remains the dominant term in academic and public discourse. The origin of AI as a formal field is often traced to the 1956 Dartmouth Conference, where early AI programs, such as the Logic Theorist, were introduced (Crevier, 1993). Since then, the field has experienced alternating periods of intense development, such as the rule-based expert systems and stagnation, commonly referred to as “AI winters,” caused by reduced funding and unmet expectations. Recent breakthroughs in data availability, computational power, and algorithmic innovation have driven a new era of AI development. AI is now embedded in many aspects of daily life, often without being explicitly recognised as such. For instance, email spam filters, voice assistants like Cortana and Google Home, and recommendation systems on platforms like Netflix are all AI-driven applications (MailWisher.net, 2024). Language learning tools such as Duolingo also leverage AI to provide adaptive feedback and personalised instruction. Additionally, advanced AI techniques—including supervised and unsupervised machine learning, as well as reinforcement learning—are transforming various sectors, including education, healthcare, finance, and entertainment.

The core idea behind generative AI, a fast-expanding sub-area of AI, is this: systems are considered generative if they can produce new content (for example, text or images or audio or code) on the basis of patterns learned from large training datasets. Traditional AI has been employed in recognition-, classification-, and prediction-type tasks (such as spam filtering or recommendation engines), while generative AI tools such as ChatGPT, Grammarly, and Bard were made to respond like humans or create original output. Hence, in educational settings where language production and critical thinking are key, generative AI is especially important.

2.2 Artificial Intelligence and Critical Thinking

Critical thinking encompasses a range of cognitive processes including conceptualisation, analysis, synthesis, and the evaluation of information. It is defined as “reflective thinking focused on deciding what to believe or do” (Ennis, 1993, pp. 86–179), and has also been described as methodical and disciplined reasoning (Calma & Davis, 2021). The emphasis affected considerably many disciplines, in including EFL training and business conduct (Murawski, 2014; Shaw et al., 2020; Penkauskiene et al., 2019). As AI technologies have demonstrated capability at all levels of cognitive retrieval of knowledge through to creative generation and creation—Bloom's Taxonomy (Bloom et al., 1956; Anderson et al., 2001; Krathwohl, 2002) can serve as a useful lens for studying their effect on developing critical thinking. AI can be used to stimulate highly complex real-world situations within a classroom, allowing students to make considered decisions (JISC, 2023). Furthermore, AI-based systems will support independent thinking and creative decision-making, which, in other contexts, is expected to foster superior cognitive processing (Ruddolph et

al., 2023). Although the nature of AI's influence on critical thinking seems to be highly dependent on how well AI is integrated with teaching procedures, the theoretical underpinnings suggest that AI has high potential to enhance the quality of critical thinking in LL contexts through thoughtful avenues of implementation.

2.3 Previous Studies

For many research domains, the role of digital technologies and artificial intelligence (AI) has been increasingly explored for their capabilities in fostering creative thinking among EFL students within different scopes and contexts.

Jalon et al. (2024) examined the potential of ChatGPT to influence students while they learn Python programming. Although embedded in the computer science context, the study found that learners found this AI-based tools highly engaging and helpful, providing forceful evidence that AI's have larger potential in educational settings, including language learning.

Weisskalband Abdel-Hack and Helwa (2024) checked out the impact of Online-based teaching storytelling strategies on the reflection and analytical powers of EFL learners. Their qualitative findings showed that the digital narrative prompted students with greater motivation and reflection toward the intervention, thereby enhancing their critical thinking capacity.

In a similar vein, Chou (2020) to improve higher-order thinking. In terms of cognitive engagement, the exercises that encouraged a comparative, evaluative, and synthesizing cognitive action were profound.

But not every study has been without criticism. Over-reliance on algorithmic tools may reduce learners' autonomy and self-regulation, according to Zhai et al. (2024). Studies supporting guided reflection and critical evaluation exercises as preventive measures against over-reliance echo these concerns.

Furthermore, issues with digital access and equity continue to surface in the literature. Drawing on Van Dijk's (2020) digital divide theory, numerous studies highlight how unequal internet access and low digital literacy exacerbate educational disparities. For example, Godwin-Jones (2018) argues that the absence of institutional infrastructure hinders the effective use of technology, particularly in resource-poor regions such as Kurdistan.

In his study, Shareef (2024, pp.321-333) explained the EFL Kurdish students' perceptions of AI tools well-integrated with traditional methods. This can be seen as evidence that support the added value that AI could have for language teaching in hybrid environments.

Many academics advocate for a balanced approach to AI and traditional teaching techniques.

Warschauer and Healey (1998) contend that rather than replacing teacher-led instruction, technology should enhance it. In a similar vein, Yin et al. (2014) demonstrated how scaffold formative assessments can promote critical thinking and metacognition in technology-enhanced learning environments.

In short, previous studies have shown that the use of AI-powered tools in EFL instruction has a promising potential in improving critical thinking. On the other hand, however, it also indicates some serious disadvantages such as over-dependence, inequitable access, and the need for careful integration in pedagogy. Therefore, the current study is designed within this framework to examine the development of autonomous critical thinking skills in learners within the context of AI appropriation in Kurdish EFL settings.

3. Methodology and Data Collection

3.1 Introduction

This section explains how artificial intelligence (AI) is used enhance the critical thinking skills of Salahaddin University-Erbil EFL students. The study employed qualitative methods for data collection, including semi-structured interviews with EFL instructors. The interviews present a systematic yet flexible means through which participants can be studied concerning their perspectives on using digital tools, specifically AI tools, for language teaching

purposes. This section discusses the empirical linking of artificial intelligence (AI) and critical thinking to achieve better results for EFL teachers at Salahaddin University-Erbil. The research employed qualitative research procedures, collecting relevant data through semi-structured interviews with EFL instructors. These interviews allow for a relatively homogenised via dynamic way of gathering the opinions of the study participants regarding the application of digital tools, especially AI tools, in language learning. While this study is context-specific and limited to one university, the findings provide valuable insights into how AI tools are perceived and integrated within similar EFL environments. However, generalizing the results beyond Salahaddin University-Erbil should be approached with caution, as institutional, technological, and pedagogical contexts may differ across other universities.

3.2 Research Design

This section describes the research design and methods used to investigate how EFL teachers incorporate AI tools in their language teaching. A qualitative approach was selected to deeply explore teachers' perspectives and experiences with these digital tools. The study primarily examines two key areas: how AI tools are used in the university setting and how teachers perceive their influence on students' critical thinking abilities. Data were gathered through semi-structured interviews, which provided rich and detailed insights into instructors' views.

3.3 Participants

The study focused on the attitudes of EFL instructors from three faculties at Salahaddin University-Erbil regarding digital learning technologies. The sample included 18 EFL instructors in total: eight from the College of Education, six from the College of Basic Education, and four from the College of Languages. The following data involved the 18 instructors from the three faculties:

- Twelve interviews were finished, yielding a 66.7% participation rate.
- Six rejections, representing 33.3% of the total non-participation

Reasons for Non-Participation

Teachers who declined to participate frequently voiced concerns about the use of digital learning tools, such as:

- Perceived limits on cognitive development opportunities;
- Limitations on independent thought; Possibility of limitations on original ideas
- AI tools providing pre-formulated responses;

3.4 Data Collection Instrument

The tool covers three major areas of technological language instruction within a semi-structured interview. For this study, a semi-structured interview guide is created with seven open-ended questions covering the following areas:

1. Instructional Implementation: The various ways in which digital technologies are used, depending on the different levels of proficiency in the language.
2. Cognitive Outcomes: Aside from fostering critical-thinking abilities among students, the exciting aspects of AI that engage students.
3. Professional Readiness: Problems faced by individuals and institutions in the implementation of technology.

In developing the interview tool, four methodological objectives were put forward:

1. To solicit rich expert accounts of educators' experiences in the classroom.
2. To allow surprising themes to arise.
3. For every participant to be asked the same questions, and
4. To record contextual factors influencing technology adoption.

These probing, follow-up questions, and scenario-based prompts provided a mechanism for extensive data collection, while also allowing for participant-led discussion.

3.5 Data Analysis

Thematic analysis was used to identify patterns of significance in the interview transcripts. Initially, the transcript ls were read multiple times to gain a comprehensive understanding of the data. Thereafter, the analysis passed through various systematic steps, such as: (1) identifying and categorising significant statements, (2) placing these codes into relevant categories, and (3) iterative refinement of these categories towards the eventual description of major themes.

This process shed light on the educators' views about digital tools in EFL classrooms and their supposed effects on the students' critical thinking skills. With consideration of the participants' opinions, the researcher was able to provide an account of the predominant opinion and the more subtle differences, while ensuring validation and transparency in the analysis.

3.6 Ethical Considerations

The ethics of this research were strictly in accordance with guidelines outlined by Salahaddin University-Erbil. All instructors participating in the study were given sufficient information about its objectives and procedures, and they provided their informed consent. The participation of teachers was entirely voluntary, and there no consequences attached to any refusal. Some procedures were put in place to safeguard confidentiality: documents were to use pseudonyms instead of the actual names of the participants; any audio recordings of the interview ls were to be securely stored in encrypted, password-protected files; and participants could refuse to answer any question they found uncomfortable. In this way, the integrity of the research procedure was maintained, while respect was given the autonomy of the participants, particularly in terms of protecting their privacy.

3.7 Limitations

Despite offering insightful information, this study has several limitations that should be noted. Initially, the data collection period was short, and more teacher interviews conducted over a longer period of time might have produced more comprehensive findings. Second, the absence of six invited teachers who declined to participate may have introduced bias, as their potentially more sceptical perspectives, were not captured. Finally, this study reflects only one aspect of the broader picture by focusing exclusively on teacher interviews, without incorporating student perspectives or classroom performance data. These limitations suggest that while the findings are meaningful within this specific context, future research would benefit from expanding to multiple institutions and employing a mixed-methods approach to achieve a more comprehensive understanding of AI's role in EFL instruction.

4-Results and Discussion

Introduction

This section presents and analyses data collected through semi-structured interviews with eighteen EFL instructors from three faculties at Salahaddin University-Erbil (College of Education, College of Basic Education, and College of Languages). The findings highlight four key dimensions of technology integration in language instruction: (1) perceived efficacy of digital tools in fostering critical thinking skills, (2) predominant types of tools used across disciplines, (3) systemic and pedagogical challenges in implementation, and(4) evidence-based recommendations for improving technological integration.

Through thematic analysis of instructor narratives, the section identifies significant patterns in technology adoption and situates these findings within current literature on technology-mediated language pedagogy. Special attention is given to the balance between the potential of digital tools and their actual classroom impact on the development of cognitive skills. This section proposes a framework for leveraging technology to enhance critical thinking abilities in EFL learning environments.

4.1 Findings and discussion

4.1.1 The Value of Interactive Educational Materials in Promoting Critical Thinking

The results revealed diverse instructor perspectives on the impact of digital technologies on critical thinking. Supportive teachers emphasised that interactive learning resources encourage inquiry by exposing students to a range of viewpoints and questioning their assumptions. In this regard, Ennis (1993) defines inquiry as a form of reflective thinking directed toward the choice of what to believe or do. Holmes, Bialik, and Fadel (2019) further articulated that AI can enhance cognitive abilities when students analyse complex data, supporting educators' views that tools like AI promote evaluate learning by providing students with the possibility to evaluate AI-generated solutions. Some educators, however, were concerned that the heavy hinder their ability to think independently, thereby hindering the development of critical thinking skills. In this light, the concern is aptly echoed in Calma and Davis (2021) who assert that engagement, rather than passive acceptance of AI outputs, is a requirement for critical thinking. These two contrasting arguments are sufficient to explain the complex relationship between technology and cognitive development as well as the tremendous influence that pedagogical strategies have on learning objectives.

4.1.2 Using AI Tools in EFL Teaching

Most of the tools that source information through interviews include these three main types of AI tools, specifically transforming the EFL classroom: writing aids, and grammar-checking programs (such as Grammarly), and text-generation platforms such as ChatGPT. According to Holmes et al. (2019), AI does not supplant human cognitive roles but rather builds upon them. Many educators who affirms this claim say that the tools have greatly improved language accuracy and content production. There's also the notion that people can personalise an AI tool to produce outputs appropriate in their culture, and that this lends credence to the view that AI can make humans smarter. However, a large part of the educators contest a holistic approach, stressing that these AI tools should enhance, rather than replace, conventional collaborative and analytical learning methods. This aligns with the views espoused in Shaw et al. (2020) and Murawski (2014), which emphasises structured cognitive tasks and interpersonal interactions as the bedrock on which critical thinking for language learning is built. All findings suggest that effective incorporation of AI tools calls for their integration into broad pedagogical frameworks combining state-of-art technologies with tried-and-true methods of instruction.

4.1.3 Approaches to Implementation in the Classroom

There were two diametrically opposed views concerning AI tools in EFL instruction. Approximately 65% of the instructors supported the combination of traditional methods with AI resources for various modes of learning. They reported that they benefited from AI-assisted collaborative analytical activities as well as scaffolding for research skills within Bloom's taxonomy framework, especially concerning higher-order cognitive skills like analysis and evaluation (Bloom et al., 1956; Krathwohl, 2002). In opposition, around 35% of instructors voiced their hesitance to embrace AI due to the potential of automated feedback systems inciting surface engagement and restricting opportunities for in-depth research and reflection. Penkauskiene et al. (2019) also cautioned that instant technology feedback might inhibit even higher-order cognitive processes. This discord reveals the need for critical and elaborate implementations that will guarantee the benefits that AI offers, while shielding the academic integrity of the conventional approaches.

4.1.4 Challenges in AI Integration

The most significant barriers perceived by the participants to the successful integration of AI tools are uneven access to the Internet, varying degrees of digital literacy among students, and concerns regarding academic integrity. Such practical challenges were in the same spirit as the emphasis laid down by the JISC (2023) on infrastructure and institutional support with a view to maximising AI's potential in education. On the other hand, Rudolph et al. (2023) also raised ethical concerns regarding the authenticity of learning, as students often submit AI-generated output without critical evaluation. In summary, all these challenges require a robust support system that encompasses not only a technological infrastructure but also pedagogical support to facilitate genuine cognitive development through AI.

4.1.5 Pedagogical Advantages

There were some important challenges, but teachers emphasised the pedagogical merits attached to the careful use of AI-based tools. The interaction during training tasks with different language models along with their timely feedback provides support for the development of analytical skills and thus strengthens Bloom's taxonomy as a framework for cognitive development (Bloom et al., 1956). Furthermore, the automation of other tedious tasks, such as grading, frees up teachers' time for personalised instruction, enhancing the efficacy and efficiency of teaching (Holmes et al., 2019).

4.1.6 Suggestions on Enhancing AI Tools

Participants have suggested very important changes to better align AI tools with local, as well as learning objectives and learner needs. Some of these changes include making the tool culturally relevant, especially for Kurdish learners, incorporating adaptive features according to the proficiency levels each learner possesses, utilising metacognitive prompts to encourage deep analysis, and improving accuracy to avoid misleading results. This agrees with JISC (2023) and Rudolph et al. (2023), who argue to optimise the educational impact of artificial intelligence, careful contextualisation and customisation, tailored to the diversity of learners should be in place.

4.1.7 Suggestions for Teachers

Such discipline-based reasoning in the exercises of educators in practice aligns with what Davis (2021) advocates for regarding the use of AI in education as an adjunct to traditional pedagogies, rather than a substitute. He also mentioned the importance of lifelong professional development for both technical skills and ethical constructs in integrating AI, thus ensuring the truth and validity of academic standards in technological advancement.

4.2 Discussion of Key Findings

4.2.1 What Are the Common AI Tools Used in EFL Teaching?

An analysis of instructor responses revealed four major categories of AI-based tools commonly used in tertiary-level EFL instruction:

- 1-Generative AI tools for content creation and ideation, such as ChatGPT,
- 2-AI writing assistants, including Grammarly, which support grammar correction, coherence, and structural clarity,
- 3-Interactive, AI-powered learning platforms that offer contextualised language practice, and
- 4-Adaptive learning systems that personalise instruction based on student needs and proficiency levels.

These tools are primarily used to enhance writing skills, expand vocabulary, improve grammatical accuracy, and facilitate structured, personalised learning. Similar classifications of AI tool use have been discussed by Zou, Wang, & Xing (2022), who highlight the growing popularity of generative and corrective AI in EFL learning contexts. Additionally, Godwin-Jones (2023) emphasizes the value of adaptive systems in supporting learner autonomy and differentiated instruction in digital language learning environments.

4.2.2 What Are the Cognitive Implications of AI-Mediated Language Learning?

The findings suggest that the way AI tools are implemented plays a significant role in shaping students' critical thinking skills. Instructors observed that when students were asked to evaluate, critique, or compare AI-generated responses, they demonstrated deeper engagement and reflective thinking. These results align with constructivist learning theory (Vygotsky, 1978), which emphasizes the importance of active, student-centered learning. Moreover, this is consistent with research by Yang and Kim (2022), who argue that AI can effectively foster higher-order thinking when it is integrated into tasks that promote analysis and reflection. On the other hand, several instructors noted that students who relied passively on AI—copying responses without question—showed weaker independent thinking and reduced critical engagement. This concern echoes findings by Zawacki-Richter et al. (2019), who warn that uncritical use of AI tools may hinder students' development of essential cognitive skills. These insights underscore the importance of structured, reflective use of AI that positions it not as a shortcut, but as a tool for enhancing learners' analytical and problem-solving abilities.

4.2.3 What Are the Main Barriers Affecting the Implementation of AI Tools in EFL Classrooms?

According to instructors, several barriers hinder the effective integration of AI tools in EFL instruction at Salahaddin University. These barriers can be grouped into three main categories: infrastructural, pedagogical, and ethical.

-Infrastructure-related issues such as unreliable internet access, frequent electricity outages, and limited access to digital devices significantly disrupted the regular use of AI in classrooms. This challenge is consistent with findings by Almarzooq and Abdurrahman (2021), who reported that digital adoption in low-resource educational environments is often hindered by logistical and technical limitations.

-Pedagogical barriers included a lack of professional development and limited training in AI tool integration. Several instructors reported that AI applications were often introduced without clear alignment with learning objectives, leading to superficial use. This reflects the concerns raised by Lai and Lei (2020), who noted that insufficient training and lack of instructional scaffolding limit teachers' ability to use digital tools effectively.

-Ethical concerns were also prominent. Instructors highlighted the overuse of AI-generated content in student assignments, especially in writing and translation, raising issues around plagiarism and academic integrity. These findings echo Selwyn (2019), who argues that the ethical use of AI in education must be addressed through clear guidelines and critical digital literacy.

To overcome these challenges, the findings suggest the need for institutional support structures. This includes providing stable infrastructure, offering teacher training and pedagogical scaffolding, issuing clear ethical guidelines, and promoting reflective and responsible AI use in classrooms. While AI has the potential to significantly enhance EFL instruction, its successful integration depends on a thoughtful, well-supported, and context-sensitive implementation strategy.

4.2.4 Synthesis of Key Findings and Implications

The evidence shows that the application of digital tools, as well as artificial intelligence in the field of EFL instruction, can considerably enhance the promises it holds. Yet their success cannot be guaranteed, nor need it be unqualified; there are three interlinked issues at stake; teacher preparedness, integrity constraints, and sound design of instructional methods.

In this regard, the importance of those factors making AI appropriate in education was said to be threefold:

1. Contextual definitions must be clear and specific enough to prevent abuse and violations of academic integrity and must be established for the proper use of AI tools in education.
2. Critical Engagement: Learning events should be deliberately designed to actively engage and assess AI-generated content, rather than merely consume it.
3. Reflection Practice: Building Cognitive Engagement-Increases metacognitive development by incorporating opportunities for reflection into technology-mediated learning events.

These findings indicate that the pedagogical value of AI tools is to be realised not only in classrooms but also through deliberate, ethical, and critical teaching approaches.

5-Conclusion

5.1 Implications for Education

This research emphasises that instructional mediation is central in determining whether mediation through AI tools facilitates language and cognitive development or hinders authentic engagement in the learning process. Available AI applications can serve as a significant aid to cognitive scaffolding; however, their effectiveness will depend on thoughtful integration into classes with strong principles of academic integrity, student autonomy, and an emphasis on metacognitive skill development. This provides evidence for the necessity of well-structured professional development programs, enabling instructors to acquire both the technical know-how and familiarity with new technologies and pedagogical frameworks in alignment with learning goals. If such training is not

offered, the use of AI in education runs the risk of promoting superficial engagement rather than the more complex mental processes required for EFL learning and the growth of critical thinking abilities.

5.4 Recommendations for Future Research

Building on this study's findings, future research should explore the following directions to enhance comprehension of AI integration in EFL contexts:

1. **Studies of Longitudinal Impact:** Examine the long-term, such as the effects of continuous AI tool use on the development of problem-solving and critical thinking.
2. **Cross-Disciplinary Analyses:** Examine how AI and digital technologies are adopted and adapted across diverse academic disciplines and learner demographics to identify context-specific benefits and challenges.
3. **Development of Culturally Responsive Integration Models:** Design and evaluate technology integration frameworks that are sensitive to regional educational values, cultural norms, and learner diversity to ensure relevance and effectiveness in varied sociocultural settings.

5.6 Final Conclusion

In conclusion, this study affirms that AI technologies hold significant potential to enhance EFL learning environments by fostering critical thinking and supporting language acquisition. However, their effectiveness depends largely on thoughtful and deliberate integration within instructional design. The educational value of AI is maximised when educators scaffold its use appropriately, uphold ethical standards, and design assignments that challenge students cognitively and encourage deep engagement. Conversely, unstructured or superficial application of AI tools may undermine learners' creativity, autonomy, and problem-solving skills. Therefore, the future of AI in EFL lies in balanced, evidence-based integration, where innovative technology complements, rather than replaces, quality teaching practices.

Appendix A: Educator Perspectives on Digital Learning Technologies:

Teacher 1

1. "I believe AI tools, particularly Poemaker and ChatGPT, are highly effective in enhancing students' critical thinking skills."
2. "I integrate these tools into my teaching by encouraging students to use them to find answers or generate questions. I prefer to use Poe and ChatGPT as the most effective AI tools because of their supportive nature in promoting critical thinking."
3. "I explain the integration of AI tools in lessons to develop students' critical thinking. I describe using AI tools to help students find answers to questions and encourage them to ask questions and use AI tools to generate more questions."
4. "There are challenges like the fear of plagiarism and the obligation to paraphrase information, but we also have the issue with paid tools and risk of providing false information."
5. "I say that AI tools assist in the enhancement of critical thinking skills and their effective and frequent use, requiring courses to impart techniques on how to use AI tools."
6. "I recommend a feature that will check the reliability of data from AI tools, as I believe this will help with critical thinking."
7. "I lay emphasis on using AI tools meaningfully and suggest restricting their use so as not to be overly dependent on them. They are of assistance, but applying them only occasionally is better advice."

Teacher 2

1. "Statement to the effect that "AI might work if used by intelligent people" highlights the need for an intelligent user. Use of AI may prove to be a superlative instrument in promoting students' critical thinking capabilities."
2. "Cider is the tool I love best and simply use it to create language assessments and exercises. It has a particular flair for setting homework for students involving language practice."
3. "I emphasise Cider's use for creating authentic tasks, even though I occasionally use it for other purposes. AI is used to improve language style and collocation."

4. "One of the biggest challenges with AI tools is choosing the right prompts and keywords. Language prompts need to be changed and adjusted if AI is to produce the desired results."
5. "AI can provide creative resources, but the instructor determines how best to use them. Using high-quality content in the classroom effectively is crucial; it is insufficient on its own."
6. "I suggest a few minor improvements for critical thinking while applauding AI for its current capabilities. Certain classes may not offer many opportunities for critical thinking, depending on the subject matter."
7. "For teacher training, I suggest integrating AI with practical sessions, seminars, and workshops. The authors sought to establish a qualitative study to understand between teacher training and readiness to use AI in teaching."

Teacher 3

1. "AI tools like ChatGPT and Grammarly are used for task designing and rubric making. They are time savers as well as tools for promoting deep thinking. These tools, however, depend on how good the user is. A proficient user will use AI tools as a weapon to improve critical thinking."
2. "I use ChatGPT, Grammarly, and other tools for task and rubric design. Most are appropriate for analytical rubrics and time savers, but might require minor modifications later. Good for educational material design and organisation."
3. "I design using all AI tools in making PowerPoint presentations and tasks. They challenge teachers to think profoundly in the areas of language and how to devise tasks that promote critical thinking. University teachers will fully harness the power of these tools to study topics in detail and come up with valid tasks because they are proficient users of AI."
4. "The two main challenges are limited internet access for students and low technological skills among some students. These issues hinder the effective use of AI tools in educational settings."
5. "AI tools widen thinking and help see all sides of a topic. They can highlight overlooked aspects, making it easier to address them in teaching. AI tools can be a valuable resource for both teachers and students in enhancing critical thinking abilities."
6. "The reliability of information provided by AI tools should be improved. Teachers and students often encounter unreliable information, which can hinder effective learning. Enhancing the reliability of AI tools would make them more useful for educational purposes."
7. "Using AI tools is necessary in today's teaching and learning environment. Teachers should stay updated with the latest tools and adapt to societal and market needs. AI tools can be used for designing lessons, developing materials, evaluating student proficiency, and creating tasks, among other educational applications."

Teacher 4

1. "I generally find AI tools effective for developing students' knowledge, but not critical thinking skills. Students often have a tendency to look for ready-made answers and don't use their mobile phones properly. I don't think AI tools can improve critical thinking skills because the answers are readily available, and students don't think critically; they just ask the machine and assume everything it says is correct."
2. "I use AI tools to generate questions related to critical thinking skills. When I teach interpreting, I sometimes use AI applications to create questions that encourage students to think and then answer. This is relevant to what I teach, especially in generating questions for EFL teaching."
3. "I tell students to use AI tools as a helping tool for searching, but that doesn't mean they are mistake-free. AI tools cannot replace human intelligence."
4. "I don't encounter any specific challenges when using AI tools, but I can recognise if students have used tools like ChatGPT or Grammarly for their assignments."
5. "I think teachers can generate questions related to what they teach and create assignment descriptions to help foster critical thinking skills in students."
6. "I believe that at the moment, AI tools are incapable of asking questions. Instead of encouraging critical thinking, they are meant to provide answers. AI tools that promote inquiry and critical thinking in a variety of academic domains are something I would like to see."

7. “Like mobile phones, I think AI tools will become a seamless part of our daily lives. I counsel EFL teachers to avoid having a negative attitude towards AI and to consider how they can carefully incorporate it into their lessons without having an adverse effect on the learning outcomes of their students. I advise educators to use AI to create assignments and questions, but I also remind students that not all of the information generated by AI is entirely accurate.”

Teacher 5

1. “The teacher believes AI tools can be effective in improving students’ critical thinking skills if used as a helping tool. However, over-reliance on these tools can hinder critical thinking development. The effectiveness depends on both students and teachers and how they utilise AI.”

2. “The teacher does not use any AI tools in EFL teaching to avoid students becoming dependent on them. Instead, they prepare slides, engage students in games, and assign tasks.”

3. “The teacher mentions using one AI tool solely for preparing slides. They may ask AI for ideas on classroom management, but find that the responses are often based on the American education system and may not be applicable.”

4. “The teacher identifies challenges such as over-dependence on AI tools and the potential cultural mismatch in the information provided. They share an experience where AI suggestions did not work in their classroom context.”

5. “When used appropriately, AI can be beneficial for generating ideas, summarising information, and saving time in finding relevant content.”

6. “The teacher does not have specific ideas for improvements to AI tools, as they are not very familiar with them.”

7. “The teacher advises EFL teachers to familiarize themselves with AI tools and to consider their integration into teaching, emphasising the importance of understanding how to use them effectively.”

Teacher 6

1. “AI tools are significant in developing critical thinking skills. They provide personalised learning experiences and interactive simulations. Help students challenge specific points to enhance understanding and connect ideas with updated information.”

2. “Specific AI tools are not mentioned, but they are utilised to personalise learning and provide simulations.”

3. “AI can be blended with the teaching process to improve the learning experience.”

4. “No specific challenges were mentioned, but the focus is on effective usage and integration.”

5. “AI tools enhance critical thinking by providing quick and accurate information. They enable students to create stronger concept notions and produce a wider range of ideas.”

6. “No specific suggestions were provided for improvements.”

7. “Emphasise the importance of blending AI into teaching to enhance critical thinking skills.”

Teacher 7

1. “Improvement is seen when students are asked deeper questions, prompting independent thinking and analysis of ideas.”

2. “Primarily use chatbots and language AI to help students think, reflect, and improve their learning.”

3. “Encourage students to interact with AI, analyse content, and challenge AI responses.”

4. “AI can make mistakes; students may rely too heavily on it and use it excessively.”

5. “AI provides instant feedback, which encourages students to improve their ideas.”

6. “AI should ask more critical thinking questions and guide students to think deeper rather than just providing answers.”

7. “Use AI as a helper, not a replacement, to encourage students to think beyond AI’s responses and enhance their overall learning.”

Teacher 8

1. “AI reduces creativity and novelty as students get analyses and summaries ready without much thought.”

2. "AI does not promote critical thinking."
3. "Promotes critical thinking when creating concept maps, as students need to ask accurate questions to retrieve useful information from AI."
4. "Plagiarism."
5. "It's good for collecting ideas, and to do that, students need to ask accurate questions, which requires thought."
6. "AI should deliver information from reputable sources."
7. "It's better to integrate AI with different types of activities in class to promote critical thinking."

Teacher 9

1. "AI tools enhance critical thinking by encouraging analysis, asking open-ended questions, and finding solutions to learning problems."
2. "I occasionally check my students' work using Grammarly and other editing programs. They save me time and help me identify mistakes."
3. "I limit students' use of AI tools to encourage independent research and exploration."
4. "It is sometimes difficult to find content that fits with lesson objectives, and some activities are challenging to implement."
5. "AI tools that are analytical and offer immediate feedback assist students in developing their critical thinking skills."
6. "Contextual solutions and interactive feedback are a couple of intriguing features."
7. "I advise my coworkers to improve learning outcomes and their teaching abilities by utilizing AI tools."

Teacher 10

1. "It is not effective for literature, as it requires personal understanding and experience."
2. "I do not use it."
3. "I do not use it."
4. "Challenges faced are from students who misuse AI and pretend it is their own."
5. "Should show different perspectives."
6. "I do not see it as beneficial. It makes people lazy."
7. "Use AI sparingly and encourage independent thinking."

Teacher 11

1. "AI enhances skills by providing new information that is useful for learning English."
2. "I use ChatGPT and Grammarly."
3. "Through interactive discussions and constructing questions."
4. "Students may rely too much on AI for corrections without engaging in deeper thinking."
5. "Personalised learning and instant feedback."
6. "I prefer AI tools that simulate real-world scenarios."
7. "I advise gradual introduction of AI tools, especially since students are not familiar with them."

Teacher 12

1. "It doesn't improve critical thinking due to over-reliance; it's only good if you have an idea to improve."
2. "ChatGPT helps improve class material."
3. "I don't use AI tools regularly."
4. "Identifies challenges in AI implementation."
5. "I do not see AI as beneficial."
6. "No suggestions for improvement."
7. "Limit the use of AI tools."

Non-Participating Teachers

The following six teachers declined to participate in the interviews, believing that AI tools do not effectively improve critical thinking skills:

1. **Skepticism of AI's Impact:** These educators expressed concerns that AI tools might lead to a reliance on technology rather than fostering genuine critical thinking. They believe that the

convenience of AI-generated answers can diminish students' motivation to engage deeply with the material.

2. Limited Use in Teaching: Due to their skepticism, these teachers do not incorporate AI tools into their teaching practices. They prefer traditional methods that encourage active learning and critical engagement with content.

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پۆلی زیرهکی دهسکرد له باشتر کردنی بیرکردنهوهی رهخهگرانه له کارامهیی له نیوان خویندکارانی زمانی ئینگلیزی وهکو زمانیکی بیانی له زانکوی سه لاهه دین-ههولیر

نالین حهسه ته ته

ئه سما عباس برایم

بهشی ئینگلیزی، کۆلیژی پهروه ده، زانکوی سه لاهه دین -

بهشی ئینگلیزی، کۆلیژی پهروه ده، زانکوی سه لاهه دین -

ههولیر، کوردستان، عیراق

ههولیر، کوردستان، عیراق

Naleen.Tatar@su.edu.krd

Asma.Brime@su.edu.krd

پوخته

ئه م توێژینه وهیه لیکۆلینه وه دهکات که چۆن خویندکارانی زمانی ئینگلیزی وهک زمانیکی بیانی له زانکوی سه لاهه دین-ههولیر توانای بیرکردنه وهی رهخهگرانه یان له ریگه ی په کخستنی ئامرازهکانی زیرهکی باشتر دهکهن. به سه رنجدان به زیادبوونی به کارهینانی ئامرازهکانی زیرهکی دهسکرد له پهروه ده دا، لیکۆلینه وهی زیاتر پیویسته بۆ دیاریکردنی ئه وهی که چۆن کاریگه رییان له سه ر گه شه کردنی مه عریفی خویندکاران هه یه. توێژینه وه که چوار تایبه تمه ندی گرنگی به کارهینانی زیرهکی دهسکرد له راهینانی زماندا دیاری دهکات له سه ر بنه ملی چاوپیکه وتنی نیمچه پیکهاته یی له گه ل هه ژده ماموستای زمای ئینگلیزی له سه کۆلیژی جیاواز: تا چه ند زیرهکی دهسکرد بیرکردنه وهی رهخهگرانه به ره وپیش ده بات، ئامرازه باوهکانی زیرهکی دهسکرد، ته حه ددیاتی جیبه جیکردن و پیشنیارهکان بۆ باشترکردن. دۆزینه وهکان نیشان ده دن که کاتیک به شیوه یه کی ستراتیژی به کارده هینرین، ئامرازهکانی وهک پلاتفۆرمی ریزمان و مۆلیده ی دهق ده توانن بیرکردنه وهی رهخهگرانه و سه ربه خۆیی فیرخواز به رز بکه نه وه. به لام پرسهکانی وهک نه بوونی ئاماده کاری ماموستا، ناته بابی په یوه ندی ئینته رنیت، نه خوینده واری دیجیتالی و ئیستغلالکردنی نائه خلاق ناوه رۆکی دروستکراوی زیرهکی دهسکرد ئامازه ی پیکرا. بۆ دلنیا بوون له یه کگرتنی ئه خلاق و پینداگۆژیکی دروست، توێژینه وه که پیشنیاری گه شه کردنی پیشه یی، په یوه ندی کولتوری ته کنه لۆژیایکی زیرهکی دهسکرد، و په وایه تی رونی به کارهینانی کاریگه ری زیرهکی دهسکرد له هاندانی مه عریفی راهینانی زمانی ئینگلیزی وهک زمانی بیانی دهکات. وشه سه رهکییه کان: زیرهکی دهسکرد، ئینگلیزی وهک زمانیکی بیانی، بیرکردنه وهی رهخه یی، په کخستنی ته کنه لۆژیای.

دور الذكاء الاصطناعي في تحسين مهارات التفكير النقدي لدى طلاب اللغة الإنجليزية كلفة أجنبية في جامعة صلاح الدين

نالین حسن تتر

أسما عباس برایم

قسم اللغة الإنجليزية، كلية التربية، جامعة صلاح الدين - أربيل، إقليم

قسم اللغة الإنجليزية، كلية التربية، جامعة صلاح الدين - أربيل، إقليم

كوردستان، العراق

كوردستان، العراق

naleen.tatar@su.edu.krd

Asma.Brim@su.edu.krd

المخلص

یبحث البحث في كيفية تحسين طلاب اللغة الإنجليزية كلفة أجنبية في جامعة صلاح الدين - أربيل لقدراتهم على التفكير النقدي من خلال دمج أدوات الذكاء الاصطناعي. ونظرا للاستخدام المتزايد لأدوات الذكاء الاصطناعي في التعليم، هناك حاجة إلى مزيد من البحث لتحديد كيفية تأثيرها على التطور المعرفي للطلاب. تحدد الدراسة أربع سمات مهمة لاستخدام الذكاء الاصطناعي في التدريب اللغوي بناء على مقابلات شبه منظمة مع 18 أستاذًا للغة الإنجليزية كلفة أجنبية من ثلاث كليات مختلفة: مدى نجاح الذكاء الاصطناعي في تعزيز التفكير النقدي، وأدوات الذكاء الاصطناعي الشائعة، وتحديات التنفيذ، واقتراحات التحسين. تظهر النتائج أنه عند استخدامها بشكل استراتيجي، يمكن لأدوات مثل منصات القواعد ومولدات النصوص أن تعزز التفكير النقدي واستقلالية المتعلم. ومع ذلك، لوحظت قضايا مثل نقص إعداد المعلم، وعدم اتساق اتصال الإنترنت، والأمية الرقمية، والاستغلال غير الأخلاقي للمحتوى الذي يولده الذكاء الاصطناعي. ولضمان التكامل الأخلاقي والتربوي السليم، تقترح الدراسة النمو المهني، والأهمية الثقافية لتغذية الذكاء الاصطناعي، والمصادقية الصريحة للتطبيق الفعال للذكاء الاصطناعي في تدريب اللغة الإنجليزية كلفة أجنبية المحفز معرفيا. الكلمات المفتاحية: الذكاء الاصطناعي، اللغة الإنجليزية كلفة أجنبية، التفكير النقدي، تكامل التكنولوجيا