Lughawiyyāt: Jurnal Pendidikan Bahasa dan Sastra Arab
P-ISSN: 2623-2421, E-ISSN: 2654-2579
Volume 9 Nomor 1 Tahun 2026

Artificial Intelligence in 21st Century Arabic Language Education: Students' Perceptions and Its Impact on Developing Critical Thinking Skill

Received :	24th December 2025	Revised :	8th March 2026	Accepted :	23th April 2026

Anggi Nurul Baity [1]
Putri Kholida Faiqoh[2]
Maziyyatul Muslimah[3]

Email:[1]anggibaity@uinkediri.ac.id, [2]putrikholidafaiqoh@uinkediri.ac.id
[3]m.muslimah@student.uq.edu.au
[1,2]Universitas Islam Negeri Syekh Wasil Kediri, Indonesia
[3]The University of Queensland, Australia

Abstract

The rapid expansion of Artificial Intelligence (AI) in the digital era has begun to reshape how students learn foreign languages, including Arabic. Beyond offering convenience and efficiency, AI tools increasingly influence how students think, process information, and construct knowledge. This study explores students' perceptions of AI use in 21st-century Arabic language learning and examines how it affects the development of critical thinking skills, particularly the higher-order cognitive processes of analysis, evaluation, and creation as conceptualized in Bloom's Taxonomy. Using a qualitative thematic approach, data were collected through questionnaires from 98 students enrolled in the Arabic Language Education Program at the Faculty of Tarbiyah, UIN Syekh Wasil Kediri. The findings show that AI supports analytical thinking (C4) by assisting students in breaking down complex Arabic texts, identifying linguistic patterns, and comparing alternative structures with greater clarity. In terms of evaluative thinking (C5), AI encourages students to question interpretations and check the accuracy of information; however, when used uncritically, it may weaken independent judgment as some students tend to accept AI-generated responses without deeper reflection. Regarding creative thinking (C6), AI helps students generate ideas, organize arguments, and experiment with language production, yet excessive dependence can limit originality and reduce opportunities for authentic knowledge construction. Importantly, many students demonstrate awareness of these challenges and adopt adaptive strategies, such as selectively using AI, verifying outputs with credible sources, and reformulating information in their own words. These findings suggest that AI does not inherently diminish

critical thinking; rather, its impact depends on how consciously and pedagogically it is integrated into the learning process. When guided appropriately, AI can serve as a supportive cognitive partner in fostering higher-order thinking in Arabic language education.
.

Keywords: *Artificial Intelligence, Arabic Language Learning, Critical Thinking, 21st Century Skills, Bloom's Taxonomy*.

Introduction

In the 21st century, the development of information and communication technology has transformed various aspects of life, including in the field of education. The Fourth Industrial Revolution, marked by advancements in artificial intelligence (AI), the Internet of Things (IoT), and big data, has influenced the way we learn and teach.[1] Amid this transformation, the Arabic language, as one of the important languages in the world, especially in countries with large Muslim communities[2], faces new challenges in education.[3] The use of digital technology, particularly AI, has become an essential tool in facilitating the process of learning Arabic, but it also raises challenges related to the development of critical thinking skills.

Artificial intelligence, such as Google Translate, ChatGPT, and various other translation applications, has become an integral part of the Arabic language learning process.[4] These tools offer quick solutions for translating texts, understanding language terms, and even answering complex questions. In the context of Arabic education, where students often face complex material and require a deep understanding of grammatical structures and cultural contexts, AI can provide significant ease. This technology allows students to access

[1] Rahma Syerlita and Irwan Siagian, "Dampak Perkembangan Revolusi Industri 4.0 Terhadap Pendidikan Di Era Globalisasi Saat Ini," *Journal on Education* 7, no. 1 (2024): 3507–15, https://doi.org/10.31004/joe.v7i1.6945.

[2] Yuangga Kurnia Yahya et al., "De-Sakralisasi Dalam Pembelajaran Bahasa Arab Di Indonesia: Analisis Bahasa Sebagai Identitas Agama," *JLA (Jurnal Lingua Applicata)* 3, no. 2 (2020): 57, https://doi.org/10.22146/jla.57232.

[3] Mahmudah and Nurhapsari Pradnya Paramita, "Transformasi Pembelajaran Bahasa Arab Di Era Digital: Tantangan Dan Peluang Dalam Pendidikan," *Prosiding Pertemuan Ilmiah Internasional Bahasa Arab* 14, no. 1 (2023): 841–58.

[4] Evy Nur Rohmawaty et al., "Peran Artificial Intelligence (AI) Dalam Pembelajaran Bahasa Arab Mahasiswa Pascasarjana UIN Maulana Malik Ibrahim Malang," *Jurnal Khatulistiwa: Jurnal Pendidikan Dan Sosial Humaniora* 4, no. 3 (2024): 316–28.

information and solutions instantly, which can help them complete academic tasks and understand material more quickly.

However, the use of AI in Arabic language learning also presents significant challenges, particularly regarding its impact on students' critical thinking skills.[5] Critical thinking is a vital skill in language learning, as it involves the ability to analyze, evaluate, and solve problems deeply.[6] Meanwhile, Arabic, with its rich grammatical structure and profound cultural nuances, demands a comprehension that goes beyond literal translation. Over-reliance on AI for instant solutions may hinder the development of these analytical skills[7], as students may tend to accept answers without further analysis.

As a tool for Arabic language learning, AI offers various advantages, such as accelerating the translation process and providing quick access to learning materials.[8] However, the use of AI also presents risks related to a decline in critical thinking skills in translation. In the context of Arabic language learning, where contextual understanding and in-depth analysis are crucial, excessive use of AI can cause students to rely on technology without developing the cognitive skills necessary to understand and translate texts deeply.

In some cases, students may feel more comfortable using AI to complete academic tasks, such as translating texts or answering questions, without considering the quality or accuracy of the results provided by AI.[9] This can lead to a decline in their ability to evaluate and analyze information critically. By understanding students' perceptions of AI, this research aims to identify how this

[5] Lukman Lukman et al., "Problematika Penggunaan Artificial Intelligence (AI) Untuk Pembelajaran Di Kalangan Mahasiswa STIT Pemalang," *Madaniyah* 13, no. 2 (2024): 242–55, https://doi.org/10.58410/madaniyah.v13i2.826.

[6] Adhitya Rahardhian, "Kajian Kemampuan Berpikir Kritis (Critical Thinking Skill) Dari Sudut Pandang Filsafat," *Jurnal Filsafat Indonesia* 5, no. 2 (2022): 87–94, https://doi.org/10.23887/jfi.v5i2.42092.

[7] Mulyadi et al., "Pengaruh Penggunaan Artificial Intelligence Terhadap Minat Baca Mahasiswa/I Fakultas Ilmu Kesehatan Upnvj," *Jurnal Ilmiah Penelitian Mandira Cendikia* 2, no. 11 (2024): 16–25.

[8] Eka Lutfiyatun et al., "Pemanfaatan Artificial Intelligence (AI) Dalam Tarjamah Dan Muhadatsah Di Perguruan Tinggi," *Balai Diklat Keagamaan Aceh* 2, no. 2 (2023): 93–105.

[9] Wahyu Untara and Teguh Setiawan, "Problema Mesin Penerjemah Berbasis Ai Dalam Proses Penerjemahan Buku Inggris-Indonesia Dan Solusinya," *Adabiyyāt: Jurnal Bahasa Dan Sastra* 4, no. 1 (2020): 92, https://doi.org/10.14421/ajbs.2020.04105.

technology affects their learning process and how they balance the use of technology with the development of critical thinking skills.

The study of AI usage in Arabic language learning is not new in the scope of research and education. For instance, research conducted by Lukman et.al[10] discusses the issues of AI use for learning among students'. Rohmawaty et.al[11] also explores the role of AI in Arabic language learning for students, and Azanulhaq[12] investigates students' perceptions of the integration of AI technology in Arabic language learning. However, studies on the utilization of AI in Arabic language learning and its impact on students' critical thinking skills have not been extensively explored. Therefore, the distinction of this research from others lies in its focus on the impact of AI on critical thinking skills in Arabic language learning.

Additionally, this study also focuses on the strategies used by students to balance the use of AI with the development of critical thinking skills. This is important because while AI can provide ease and efficiency in learning, it is essential to ensure that students do not become entirely dependent on technology.[13] By identifying how students integrate AI into their learning process and the strategies they use to maintain critical skills, this research offers guidance for educators in designing effective learning methods.

This research is also relevant in the context of the 21st-century Arabic language curriculum. An effective curriculum should consider the integration of technology with the development of deep cognitive skills.[14] The results of this research can help policymakers and educators design curricula that wisely utilize technology without sacrificing the development of critical thinking skills. This is crucial to

[10] Lukman et al., "Problematika Penggunaan Artificial Intelligence (AI) Untuk Pembelajaran Di Kalangan Mahasiswa STIT Pemalang."

[11] Rohmawaty et al., "Peran Artificial Intelligence (AI) Dalam Pembelajaran Bahasa Arab Mahasiswa Pascasarjana UIN Maulana Malik Ibrahim Malang."

[12] Azanulhaq Azanulhaq and Rubiyatna Sakaroni, *Persepsi Siswa Terhadap Integrasi Teknologi AI TalkPal Dalam Pembelajaran Bahasa Arab*, 9, no. 2 (2024): 90–105.

[13] Sirah Robitha Maula et al., "Ketergantungan Mahasiswa Universitas Jember Terhadap Artificial Intelligence (AI)," *ALADALAH: Jurnal Politik, Sosial, Hukum Dan Humaniora* 2, no. 1 (2023): 01–14, https://doi.org/10.59246/aladalah.v2i1.608.

[14] Bachtiar Bachtiar, "Pengembangan Kurikulum Berbasis Kebutuhan Peserta Didik Dan Kehidupan Global Dalam Konteks Indonesia," *Edumaspul: Jurnal Pendidikan* 4, no. 2 (2020): 449–60, https://doi.org/10.33487/edumaspul.v4i2.2977.

ensure that students not only master Arabic technically but also possess the analytical skills needed to understand the context and nuances of the language deeply.

Method

This study uses a qualitative method to explore the perceptions of students in the Arabic Language Education program at the Faculty of Tarbiyah, UIN Syekh Wasil Kediri, regarding the use of artificial intelligence (AI) in Arabic language learning and its impact on critical thinking skills. The research sample consists of 98 students who were selected purposively, meaning the respondents were chosen based on specific criteria to ensure they had direct experience with the use of AI in the context of Arabic language learning. Data were collected through questionnaires.

Data analysis was conducted qualitatively using a thematic approach, where respondents' answers were categorized and interpreted to identify key themes and patterns in their perceptions. This method allows the researcher to better understand how students experience and assess the use of AI, as well as how this technology impacts their critical thinking skills. The findings of this study are expected to provide deep insights into the dynamics between AI usage and the development of cognitive skills in Arabic language learning.

Results and Discussions

Patterns of AI Utilization in Arabic Language Learning by Students

In the digital era of the 21st century, the sophistication of artificial intelligence (AI) technology has become an inseparable part of the world of education[15], including in foreign language learning.[16] In the environment of students in the

[15] Nafil Siraj Pramudita, *Implikasi AI Bagi Gen Z Di Era Pendidikan Digital: Tantangan Pengembangan Etika Islam*, 16, no. 1 (2025): 2025.

[16] Atikah Nur Halisah and Universitas Tanjungpura, "AI Dalam Pembelajaran Bahasa : Evaluasi Keefektivan Alat Pengenalan Ucapan Dalam Kelas Bahasa Arab Mahasiswa Pendidikan Bahasa Arab IAIN Pontianak Tahun 2020 .," *Seminar Nasional Pendidikan (SNP) 2024*, 2024, 386–98; Zhiqun Ouyang et al., "The Effects of Duolingo, an AI-Integrated Technology, on EFL Learners' Willingness to Communicate and Engagement in Online Classes," *International Review of Research in Open and Distributed Learning* 25, no. 3 Special Issue (2024): 97–115, https://doi.org/10.19173/irrodl.v25i3.7677; Dhanan Abimanto and Iwan Mahendro, "Efektivitas Penggunaan Teknologi AI Dalam Pembelajaran Bahasa Inggris," *Sinar Dunia: Jurnal Riset Sosial Humaniora Dan Ilmu Pendidikan* 2, no. 2 (2023): 256–66, https://doi.org/10.58192/sidu.v2i2.844.

Arabic Language Education program at UIN Syekh Wasil Kediri, this phenomenon is clearly evident through a survey conducted with 98 respondents, revealing their level of adoption and perceptions of using AI in the learning process. The findings illustrate how AI has become a learning tool that is not only practical but also shapes new learning patterns.

The survey results show that all students (100%) have used AI in Arabic language learning. This finding strongly indicates that AI has penetrated both formal and informal learning spaces for students. Interestingly, the frequency of AI use is heavily influenced by the learning context: 42.9% of students reported using AI most frequently when completing assignments, while 18.4% use AI almost every day. This suggests that AI is not just a backup tool, but an active part of students' learning strategies.[17]

The most popular AI tools used among students are Google Translate, Gemini, and paraphrasing tools. All three have one thing in common: they offer ease in understanding texts through automatic translation or paraphrasing. This indicates that translation is a primary need for students in understanding Arabic [18], especially when faced with complex sentence structures or unfamiliar vocabulary. The reliance on these tools reflects a pragmatic, results-driven learning pattern. The following graph illustrates the utilization of AI in Arabic language learning.

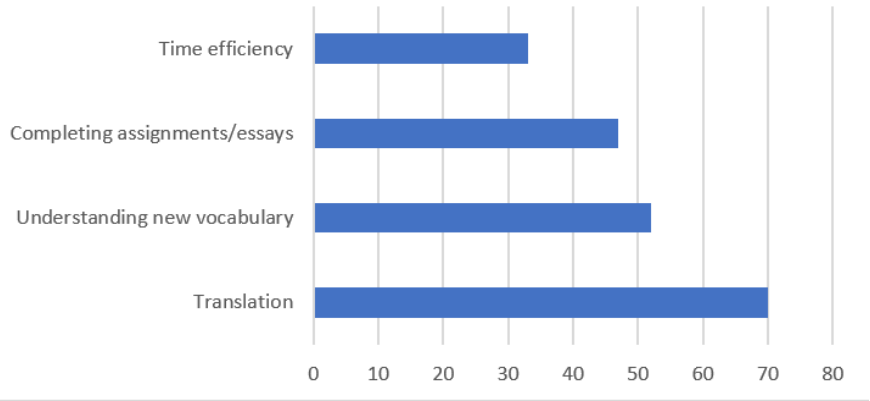


Figure 1. Graph of AI Utilization in Arabic Language Learning

[17] Husamah et al., *Teknologi Pendidikan: Strategi Pembelajaran Inovatif Di Era Digital* (Eureka Media Aksara, 2025).

[18] Umi Hanifah, *Urgensi Pembelajaran Menerjemah Arab-Indonesia Pada Perguruan Tinggi Agama Islam Di Indonesia Universitas Islam Negeri Sunan Ampel URGENSI PEMBELAJARAN MENERJEMAH ARAB-INDONESIA Terhadap Pembelajar Bahasa Arab , Baik Di Perguruan Tinggi Agama Islam Negeri*, n.d.

The main motivation for students in using AI also supports these findings. As many as 82.6% of respondents use AI for translation purposes, making it the most dominant function. This is followed by 36.7% who use AI to enrich their understanding of new vocabulary, and 34.3% who utilize AI to help compose essays or written assignments. This fact shows that AI is seen as a bridge solution to language limitations, both in receptive aspects (reading and understanding) and productive aspects (writing).

Interestingly, 27.5% of students also use AI for time efficiency reasons. This indicates that AI is perceived as an intelligent solution that speeds up the learning process without having to go through time-consuming conventional methods. This tendency highlights the transformation in modern students' learning styles, prioritizing speed and effectiveness over the perseverance of a lengthy process. AI is not only used to access information but also as a tool to compose answers, complete projects, and understand language structure

However, while AI is seen as practically helpful, perceptions of its effectiveness show diverse dynamics. The majority of students (61.2%) believe that AI helps improve their understanding of the material, with 17.3% of them feeling greatly assisted. However, 28.6% of respondents remain neutral, indicating that some students still doubt the accuracy and relevance of AI results. This shows an awareness that while AI is beneficial, it still has limitations, particularly in capturing cultural nuances and the pragmatic context of the Arabic language.

Furthermore, when asked about their level of trust in AI results, only 2.5% of students fully trust it, and 34.3% trust it to some extent. Most others are neutral or not entirely convinced. This reflects students' critical stance that, while AI can help, they do not accept all information provided without verification. The need to reassess, filter, and match AI results with their own knowledge underscores the continued need for human interpretation.[19]

[19] Jieqiong Cao et al., "Not All Forms of Artificial Intelligence Are Perceived Equal: AI Functions and Work Outcomes," *Journal of Open Innovation: Technology, Market, and Complexity* 11, no. 2 (2025): 100521, https://doi.org/10.1016/j.joitmc.2025.100521.

This low level of trust may also be due to students' experiences with inaccurate or contextually inappropriate AI translations.[20] Arabic, as a language rich in meaning, idiomatic expressions, and closely tied to cultural values, requires an approach that goes beyond literal translation. Therefore, AI should be understood as a tool to assist, not a replacement for students' critical thinking processes in understanding and producing language.

These findings indicate that the integration of AI in Arabic language learning has brought significant benefits, especially in supporting easy access to information, accelerating the learning process, and aiding in academic tasks. However, proper pedagogical guidance is still necessary to ensure that students do not become passive users, but can instead adopt a critical and reflective approach toward the technology they use. Digital literacy and information literacy skills are crucial in this context.

The Impact of AI Utilization on Critical Thinking Skills in Arabic Language Learning

The use of Artificial Intelligence (AI) in Arabic language learning has brought significant changes in the way students understand and process material.[21] Within the framework of Bloom's Taxonomy, which categorizes cognitive skills from the most basic (remembering) to the highest (creating)[22], the impact of AI usage can be analyzed systematically. AI facilitates access to information at the remembering and understanding levels, but at the same time, it can pose a challenge for the development of critical thinking skills at the analyzing, evaluating, and creating levels.[23] A study conducted by Oregon State University

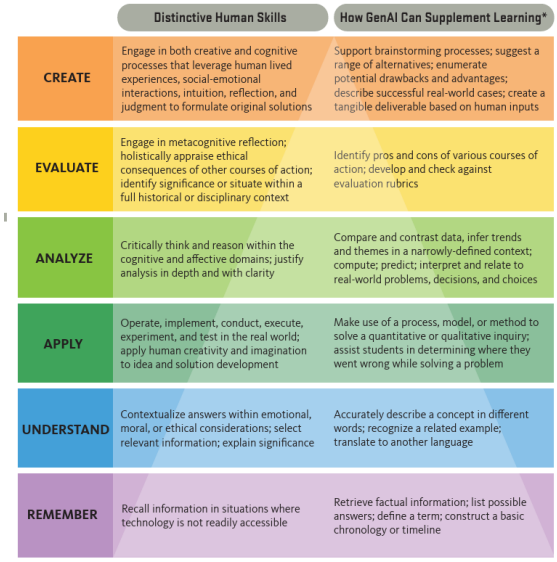
[20] Mike Thelwall and Abdallah Yaghi, "Evaluating the Predictive Capacity of ChatGPT for Academic Peer Review Outcomes across Multiple Platforms," *Scientometrics*, no. 0123456789 (2025), https://doi.org/10.1007/s11192-025-05287-1.

[21] Aunur Shabur Maajid Amadi and Khizanatul Hikmah, "Persepsi Mahasiswa Tentang Pemanfaatan Teknologi AI Dalam Pembelajaran Bahasa Arab Di Perguruan Tinggi Islam Indonesia," *Journal of Education Research* 6, no. 2 (2025): 291–301, https://doi.org/10.37985/jer.v6i2.2343.

[22] Muhammad Afif Marta et al., "Konsep Taksonomi Bloom Dalam Desain Pembelajaran," *Lencana: Jurnal Inovasi Ilmu Pendidikan* 3, no. 1 (2024): 227–46, https://doi.org/10.55606/lencana.v3i1.4572.

[23] Luke Zaphir et al., "How Critically Can an AI Think? A Framework for Evaluating the Quality of Thinking of Generative Artificial Intelligence," *arXiv Preprint*, 2024, 1–11, https://doi.org/10.48550/arXiv.2406.14769.

presents a comparison between distinctive human skills and the role of Generative AI (GenAI) in supporting learning based on the cognitive taxonomy, as shown in the following table.



	Distinctive Human Skills	How GenAI Can Supplement Learning*
CREATE	Engage in both creative and cognitive processes that leverage human lived experiences, social-emotional interactions, intuition, reflection, and judgment to formulate original solutions	Support brainstorming processes; suggest a range of alternatives; enumerate potential drawbacks and advantages; describe successful real-world cases; create a tangible deliverable based on human inputs
EVALUATE	Engage in metacognitive reflection; holistically appraise ethical consequences of other courses of action; identify significance or situate within a full historical or disciplinary context	Identify pros and cons of various courses of action; develop and check against evaluation rubrics
ANALYZE	Critically think and reason within the cognitive and affective domains; justify analysis in depth and with clarity	Compare and contrast data, infer trends and themes in a narrowly-defined context; compute; predict; interpret and relate to real-world problems, decisions, and choices
APPLY	Operate, implement, conduct, execute, experiment, and test in the real world; apply human creativity and imagination to idea and solution development	Make use of a process, model, or method to solve a quantitative or qualitative inquiry; assist students in determining where they went wrong while solving a problem
UNDERSTAND	Contextualize answers within emotional, moral, or ethical considerations; select relevant information; explain significance	Accurately describe a concept in different words; recognize a related example; translate to another language
REMEMBER	Recall information in situations where technology is not readily accessible	Retrieve factual information; list possible answers; define a term; construct a basic chronology or timeline

Figure 2. Human Skills vs. GenAI Roles in the Cognitive Learning Taxonomy (Source: Oregon State University)

Positively, AI facilitates students in remembering vocabulary and Arabic language structures through the use of applications such as Google Translate and Gemini. Many students feel assisted in understanding the meaning of sentences or texts without having to open multiple manual references. Data shows that 40,8% of students feel that AI has a positive impact on their thinking ability, as it accelerates access to and understanding of material, this is especially true at the two early cognitive levels of Bloom's Taxonomy.

However, learning does not stop at basic understanding. At the applying level, students should begin using information to solve tasks or problems. In this case, AI is often used to help formulate sentences, translate texts, or answer questions. If used reflectively, students can learn to apply concepts with the guidance of

technology. However, if used passively, simply copying results from AI without understanding, the potential for development at the applying level becomes limited.

At the analyzing level, the challenges begin to become more apparent. As many as 37.1% of students feel that AI negatively impacts their critical thinking ability. This shows that AI actually hinders the analysis process such as dissecting sentence structures, searching for implied meanings, or understanding cultural contexts in Arabic texts. AI provides answers, but not always the reasoning behind them. As a result, students miss the opportunity to conduct in-depth analysis, which should be the core of intermediate and advanced foreign language learning.[24]

Furthermore, at the evaluating level, students are expected to assess the quality or truth of information. In this context, 42.9% of students feel less critical in evaluating AI-provided results. They tend to accept the outcomes from AI without testing them against other sources or according to the correct Arabic language rules. This indicates a weakness in evaluative skills, which should be honed through active and contextual learning.

The most concerning issue is the lack of development at the creating level—the ability to create new content or solutions based on learned knowledge.[25] In the context of Arabic language learning, this could mean composing essays, dialogues, or narratives on their own. When students rely too heavily on AI, this skill becomes dulled because the creative process is replaced by instant results.[26] As many as 57.1% of students even admit to becoming more dependent on AI than thinking independently. This dependence may hinder creativity and innovation, which should be the primary goal of 21st-century education.

In the context of 21st-century competencies, critical thinking is one of the 4Cs along with communication, collaboration, and creativity that is highly emphasized

[24] Iman Santoso, "Pembelajaran Bahasa Asing Di Indonesia: Antara Globalisasi Dan Hegemoni," *Jurnal Pendidikan Bahasa Dan Sastra* 14, no. 1 (2014): 1, https://doi.org/10.17509/bs_jpbsp.v14i1.696.

[25] Dewi Amaliah Nafiati, "Revisi Taksonomi Bloom: Kognitif, Afektif, Dan Psikomotorik," *Humanika* 21, no. 2 (2021): 151–72, https://doi.org/10.21831/hum.v21i2.29252.

[26] Juni Sahla Nasution et al., "Dampak Negatif Penggunaan AI Terhadap Mahasiswa Dalam Proses Pembelajaran," *A M I: Jurnal Pendidikan Dan Riset* 3, no. 1 (2025): 35–42.

in various global educational frameworks [27], such as the P21 Framework (Partnership for 21st Century Learning). According to this framework, critical thinking means not only being able to answer questions but also the ability to ask questions, analyze evidence, evaluate arguments, and distinguish between facts and opinions.[28] Passive use of AI tends to weaken these aspects because students only play the role of users, not interpreters or critics of the information.

The theory of critical thinking developed by experts such as Richard Paul and Linda Elder[29] emphasizes that critical thinking requires an individual to think rationally, be open to various possibilities, and be capable of making logical judgments based on intellectual standards. When students become accustomed to accepting answers from AI without testing their accuracy, these intellectual standards are not developed. They no longer practice questioning assumptions, evaluating relevance, or considering logical consequences—all of which are key components in the Paul-Elder critical thinking framework.

Students' Adaptation Strategies to AI Technology in Arabic Language Learning

In facing technological advancements, particularly artificial intelligence (AI), students are not merely passive users but are also beginning to develop conscious strategies to maintain their critical thinking skills. Based on the survey results from 98 students in the Arabic Language Education Program, 60,2% of respondents stated that they position AI as a tool, not the main solution, in completing academic tasks. This strategy reflects students' metacognitive awareness of the risks of over-reliance on AI and the importance of maintaining cognitive autonomy.

The first dominant strategy is the selective use of AI. Students use AI only for mechanical processes such as checking Arabic grammar, structuring outlines, or literal translation. However, for tasks requiring higher-order reasoning such as

[27] Anggi Nurul Baity and Putri Kholida Faiqoh, "Optimizing Arabic Learning for University Students through 4c Skills of 21st Century," *Journal of Arabic Education* 02 (2022): 2.

[28] Partnership for 21 st Century Skills, "Partnership for 21St Century Skills-Core Content Integration," *Ohio Department of Education*, 2015, 1.

[29] Richard Paul and Linda Elder, *A Guide for Educators to Critical Thinking Competency Standards: Standards, Principles, Performance Indicators, and Outcomes with a Critical Thinking Master Rubric* (Rowman & Littlefield, 2019).

analyzing the meaning of classical Arabic literary texts or constructing arguments in academic essays, they choose to conduct manual analysis. This shows students' efforts to preserve higher cognitive domains in line with Bloom's Taxonomy, such as analyzing (C4), evaluating (C5), and creating (C6).

As many as 48% of students also stated that they limit their use of AI and do not directly trust AI results without verification. One respondent wrote in an open comment: "*Biasanya saya memanfaatkan ChatGPT untuk mencari ide awal, tapi setelah itu saya tetap melengkapi dengan membaca referensi langsung dan berdiskusi bersama teman maupun dosen*." This strategy reflects a process of reflective thinking, which in the framework of critical thinking theory, falls under self-regulation—the ability to assess the validity of information and regulate thinking strategies.[30]

Another pattern of responses shows that 37,7% of students actively develop a comparative strategy, which involves comparing AI results with authoritative sources such as classical Arabic dictionaries, *kitab turats* (traditional texts), or academic literature. This strategy not only demonstrates evaluative skills but also integrates digital literacy with academic literacy, which is one of the key competencies in 21st-century skills [31].

Some students also demonstrate awareness of using AI as a tool for exploration, not exploitation. In this context, AI is used to broaden perspectives or find alternative approaches to solving complex Arabic language problems. One student wrote: *"AI bisa bantu saya memahami struktur kalimat, tapi kalau teksnya sastra atau puisi, saya lebih percaya intuisi saya sendiri dan hasil diskusi di kelas."* This reflects contextual awareness, which is one of the key indicators of critical thinking.[32]

Interestingly, 32,7% of students mentioned that the use of AI actually motivates them to think more critically. They are challenged to test the accuracy of AI's

[30] Nizaruddin and Imam Kusmaryono, "How Are Critical Thinking Skills Related to Students' Self-Regulation and Independent Learning?," *Pegem Journal of Education and Instruction* 13, no. 4 (2023): 85–92, https://doi.org/10.47750/pegegog.13.04.10.

[31] Nyiayu Fahriza Fuadiah, "Integrasi Literasi Digital Dalam Pembelajaran Abad 21," *Prosiding Seminar Nasional PGRI Provinsi Sumatra Selatan Dan Universitas PGRI Palembang*, no. November (2021): 62–66.

[32] Detri Kurnia Tari and Dadan Rosana, "Contextual Teaching and Learning to Develop Critical Thinking and Practical Skills," *Journal of Physics: Conference Series* 1233, no. 1 (2019), https://doi.org/10.1088/1742-6596/1233/1/012102.

answers, check for biases in the output, and even sometimes develop counterarguments. This phenomenon shows that technology can trigger higher-order thinking processes, as long as it is used critically and reflectively.[33]

Some students also create structured rituals or work stages, such as by making a list of questions before asking AI, then rephrasing AI's answers with their own language and understanding. This strategy indicates a process of synthesis and re-elaboration of information, which is an important aspect of the creating (C6) domain in Bloom's Taxonomy.[34] In other words, AI is positioned not as a "teacher," but as a "discussion partner" that needs to be verified and interpreted.

As many as 40,8% of respondents believe that the role of lecturers is also very important in guiding the strategy for using AI. Students mentioned that lecturers who facilitate open discussions about AI and provide space for independent exploration help them develop a more critical approach. This shows that students' strategies do not stand alone but are influenced by a collaborative learning environment, which is also a key characteristic of 21st-century education.

From the perspective of challenges, a small number of students (about 12,2%) admitted that they still struggle to control excessive use of AI, especially when facing assignment deadlines. This indicates the need for stronger ethical literacy and regulatory awareness. Although a minority, this group serves as an important indicator that effective strategies are not yet widespread among all students and that more targeted pedagogical approaches are needed to help them.

Overall, the strategies used by students to balance the utilization of AI with the development of critical thinking reflect an adaptive response to the dynamics of modern learning. These strategies not only show technological awareness but also the integration of higher-order thinking competencies in line with Bloom's Taxonomy and critical thinking theory. Students are not only technology users but also become active, reflective, and responsible thinkers—an essential ability in 21st-century education

[33] Xing Du et al., "Facilitator or Hindrance? The Impact of AI on University Students' Higher-Order Thinking Skills in Complex Problem Solving," *International Journal of Educational Technology in Higher Education* 22, no. 1 (2025), https://doi.org/10.1186/s41239-025-00534-0.

[34] Shohidahon Nurmatova and Mustafa Altun, "A Comprehensive Review of Bloom's Taxonomy Integration to Enhancing Novice EFL Educators' Pedagogical Impact," *Arab World English Journal* 14, no. 3 (2023): 380–88, https://doi.org/10.24093/awej/vol14no3.24.

Conclusion

The results of the study show that the majority of respondents have used AI, primarily for translation needs, enriching vocabulary, and completing written tasks. This indicates that AI not only serves as a technical tool but has also shaped a new, more instant and efficient learning pattern. However, despite AI providing easy access to information, there is a tendency among students to become overly reliant on technology, which can reduce their involvement in deep thinking processes.

From the perspective of Bloom's cognitive taxonomy, AI does contribute positively to lower cognitive levels such as remembering and understanding. However, at higher levels—analyzing, evaluating, and creating—the uncritical use of AI actually risks weakening students' critical thinking abilities. Data shows that some students experience a decline in their sensitivity to evaluating information and face difficulties in constructing original arguments or works due to dependence on AI's instant results. Therefore, it is crucial to position AI as a tool that needs to be complemented with the reflective and evaluative abilities of the user.

Despite the potential negative impact, the majority of students exhibit adaptive and reflective attitudes towards AI usage. They have developed various strategies to maintain cognitive autonomy, such as using AI selectively, verifying results with authoritative sources, and rephrasing answers based on their personal understanding. Some students even view AI as a trigger to think more critically, not as a replacement for the thinking process. These findings suggest that with proper digital literacy and pedagogical guidance, AI can be wisely utilized to support the development of critical thinking skills in 21st-century Arabic language learning.

References

Abimanto, Dhanan, and Iwan Mahendro. “Efektivitas Penggunaan Teknologi AI Dalam Pembelajaran Bahasa Inggris.” *Sinar Dunia: Jurnal Riset Sosial*

Humaniora Dan Ilmu Pendidikan 2, no. 2 (2023): 256–66. https://doi.org/10.58192/sidu.v2i2.844.

Amadi, Aunur Shabur Maajid, and Khizanatul Hikmah. "Persepsi Mahasiswa Tentang Pemanfaatan Teknologi AI Dalam Pembelajaran Bahasa Arab Di Perguruan Tinggi Islam Indonesia." *Journal of Education Research* 6, no. 2 (2025): 291–301. https://doi.org/10.37985/jer.v6i2.2343.

Azanulhaq, Azanulhaq, and Rubiyatna Sakaroni. *Persepsi Siswa Terhadap Integrasi Teknologi AI TalkPal Dalam Pembelajaran Bahasa Arab*. 9, no. 2 (2024): 90–105.

Bachtiar, Bachtiar. "Pengembangan Kurikulum Berbasis Kebutuhan Peserta Didik Dan Kehidupan Global Dalam Konteks Indonesia." *Edumaspul: Jurnal Pendidikan* 4, no. 2 (2020): 449–60. https://doi.org/10.33487/edumaspul.v4i2.2977.

Cao, Jieqiong, Jingxian Yao, Shuhua Sun, Zhaoli Song, and Fengzhi Zhang. "Not All Forms of Artificial Intelligence Are Perceived Equal: AI Functions and Work Outcomes." *Journal of Open Innovation: Technology, Market, and Complexity* 11, no. 2 (2025): 100521. https://doi.org/10.1016/j.joitmc.2025.100521.

Du, Xing, Mingcheng Du, Zihan Zhou, and Yiming Bai. "Facilitator or Hindrance? The Impact of AI on University Students' Higher-Order Thinking Skills in Complex Problem Solving." *International Journal of Educational Technology in Higher Education* 22, no. 1 (2025). https://doi.org/10.1186/s41239-025-00534-0.

Fuadiah, Nyiayu Fahriza. "Integrasi Literasi Digital Dalam Pembelajaran Abad 21." *Prosiding Seminar Nasional PGRI Provinsi Sumatra Selatan Dan Universitas PGRI Palembang*, no. November (2021): 62–66.

Halisah, Atikah Nur, and Universitas Tanjungpura. "AI Dalam Pembelajaran Bahasa : Evaluasi Keefektivan Alat Pengenalan Ucapan Dalam Kelas Bahasa Arab Mahasiswa Pendidikan Bahasa Arab IAIN Pontianak Tahun 2020 ." *Seminar Nasional Pendidikan (SNP) 2024*, 2024, 386–98.

Hanifah, Umi. *Urgensi Pembelajaran Menerjemah Arab-Indonesia Pada Perguruan Tinggi Agama Islam Di Indonesia Universitas Islam Negeri Sunan Ampel URGENSI PEMBELAJARAN MENERJEMAH ARAB-INDONESIA Terhadap Pembelajar Bahasa Arab , Baik Di Perguruan Tinggi Agama Islam Negeri*. n.d.

Husamah, Irna Sjafei, Dyah Worowirastri Ekowati, et al. *Teknologi Pendidikan: Strategi Pembelajaran Inovatif Di Era Digital*. Eureka Media Aksara, 2025.

Lukman, Lukman, Riska Agustina, and Rihadatul Aisy. "Problematika Penggunaan Artificial Intelligence (AI) Untuk Pembelajaran Di Kalangan Mahasiswa STIT Pemalang." *Madaniyah* 13, no. 2 (2024): 242–55. https://doi.org/10.58410/madaniyah.v13i2.826.

Lutfiyatun, Eka, Depi Kurniati, and Nurul Fajriah. "Pemanfaatan Artificial Intelligence (AI) Dalam Tarjamah Dan Muhadatsah Di Perguruan Tinggi." *Balai Diklat Keagamaan Aceh* 2, no. 2 (2023): 93–105.

Mahmudah, and Nurhapsari Pradnya Paramita. "Transformasi Pembelajaran Bahasa Arab Di Era Digital: Tantangan Dan Peluang Dalam Pendidikan."

Prosiding Pertemuan Ilmiah Internasional Bahasa Arab 14, no. 1 (2023): 841–58.

Muhammad Afif Marta, Dimas Purnomo, and Gusmameli Gusmameli. "Konsep Taksonomi Bloom Dalam Desain Pembelajaran." *Lencana: Jurnal Inovasi Ilmu Pendidikan* 3, no. 1 (2024): 227–46. https://doi.org/10.55606/lencana.v3i1.4572.

Mulyadi, Nufikha Nayazsa, Inayah Dzikra, and Rizky Khaeran. "Pengaruh Penggunaan Artificial Intelligence Terhadap Minat Baca Mahasiswa/I Fakultas Ilmu Kesehatan Upnvj." *Jurnal Ilmiah Penelitian Mandira Cendikia* 2, no. 11 (2024): 16–25.

Nafiati, Dewi Amaliah. "Revisi Taksonomi Bloom: Kognitif, Afektif, Dan Psikomotorik." *Humanika* 21, no. 2 (2021): 151–72. https://doi.org/10.21831/hum.v21i2.29252.

Nasution, Juni Sahla, Armeni Maulina Siregar, Elza Syaskia Hasibuan, Fadhilatul Difla, and Tasya Nurul Azizah. "Dampak Negatif Penggunaan AI Terhadap Mahasiswa Dalam Proses Pembelajaran." *A M I: Jurnal Pendidikan Dan Riset* 3, no. 1 (2025): 35–42.

Nizaruddin, and Imam Kusmaryono. "How Are Critical Thinking Skills Related to Students' Self-Regulation and Independent Learning?" *Pegem Journal of Education and Instruction* 13, no. 4 (2023): 85–92. https://doi.org/10.47750/pegegog.13.04.10.

Nurmatova, Shohidahon, and Mustafa Altun. "A Comprehensive Review of Bloom's Taxonomy Integration to Enhancing Novice EFL Educators' Pedagogical Impact." *Arab World English Journal* 14, no. 3 (2023): 380–88. https://doi.org/10.24093/awej/vol14no3.24.

Nurul Baity, Anggi, and Putri Kholida Faiqoh. "Optimizing Arabic Learning for University Students through 4c Skills of 21st Century." *Journal of Arabic Education* 02 (2022): 2.

Ouyang, Zhiqun, Yujun Jiang, and Huying Liu. "The Effects of Duolingo, an AI-Integrated Technology, on EFL Learners' Willingness to Communicate and Engagement in Online Classes." *International Review of Research in Open and Distributed Learning* 25, no. 3 Special Issue (2024): 97–115. https://doi.org/10.19173/irrodl.v25i3.7677.

Partnership for 21 st Century Skills. "Partnership for 21St Century Skills-Core Content Integration." *Ohio Department of Education*, 2015, 1.

Paul, Richard, and Linda Elder. *A Guide for Educators to Critical Thinking Competency Standards: Standards, Principles, Performance Indicators, and Outcomes with a Critical Thinking Master Rubric*. Rowman & Littlefield, 2019.

Rahardhian, Adhitya. "Kajian Kemampuan Berpikir Kritis (Critical Thinking Skill) Dari Sudut Pandang Filsafat." *Jurnal Filsafat Indonesia* 5, no. 2 (2022): 87–94. https://doi.org/10.23887/jfi.v5i2.42092.

Rohmawaty, Evy Nur, Danial Hilmi, M. Sholih Salimul Uqba, and Ummu Sulaimah Saleh. "Peran Artificial Intelligence (AI) Dalam Pembelajaran Bahasa Arab Mahasiswa Pascasarjana UIN Maulana Malik Ibrahim Malang." *Jurnal Khatulistiwa: Jurnal Pendidikan Dan Sosial Humaniora* 4, no. 3 (2024): 316–28.

Santoso, Iman. “Pembelajaran Bahasa Asing Di Indonesia: Antara Globalisasi Dan Hegemoni.” *Jurnal Pendidikan Bahasa Dan Sastra* 14, no. 1 (2014): 1. https://doi.org/10.17509/bs_jpbsp.v14i1.696.

Sirah Robitha Maula, Sindi Dewi Aprillian, Assyfa Wahida Rachman, and Meutia Nur Marziah Azman. “Ketergantungan Mahasiswa Universitas Jember Terhadap Artificial Intelligence (AI).” *ALADALAH: Jurnal Politik, Sosial, Hukum Dan Humaniora* 2, no. 1 (2023): 01–14. https://doi.org/10.59246/aladalah.v2i1.608.

Siraj Pramudita, Nafil. *Implikasi AI Bagi Gen Z Di Era Pendidikan Digital: Tantangan Pengembangan Etika Islam*. 16, no. 1 (2025): 2025.

Syerlita, Rahma, and Irwan Siagian. “Dampak Perkembangan Revolusi Industri 4.0 Terhadap Pendidikan Di Era Globalisasi Saat Ini.” *Journal on Education* 7, no. 1 (2024): 3507–15. https://doi.org/10.31004/joe.v7i1.6945.

Tari, Detri Kurnia, and Dadan Rosana. “Contextual Teaching and Learning to Develop Critical Thinking and Practical Skills.” *Journal of Physics: Conference Series* 1233, no. 1 (2019). https://doi.org/10.1088/1742-6596/1233/1/012102.

Thelwall, Mike, and Abdallah Yaghi. “Evaluating the Predictive Capacity of ChatGPT for Academic Peer Review Outcomes across Multiple Platforms.” *Scientometrics*, no. 0123456789 (2025). https://doi.org/10.1007/s11192-025-05287-1.

Untara, Wahyu, and Teguh Setiawan. “Problema Mesin Penerjemah Berbasis Ai Dalam Proses Penerjemahan Buku Inggris-Indonesia Dan Solusinya.” *Adabiyyāt: Jurnal Bahasa Dan Sastra* 4, no. 1 (2020): 92. https://doi.org/10.14421/ajbs.2020.04105.

Yahya, Yuangga Kurnia, Umi Mahmudah, and Luthfi Muhyiddin. “De-Sakralisasi Dalam Pembelajaran Bahasa Arab Di Indonesia: Analisis Bahasa Sebagai Identitas Agama.” *JLA (Jurnal Lingua Applicata)* 3, no. 2 (2020): 57. https://doi.org/10.22146/jla.57232.

Zaphir, Luke, Jason M. Lodge, Jacinta Lisec, Dom Mcgrath, and Hassan Khosravi. “How Critically Can an AI Think? A Framework for Evaluating the Quality of Thinking of Generative Artificial Intelligence.” *arXiv Preprint*, 2024, 1–11. https://doi.org/10.48550/arXiv.2406.14769.