

Strategies for Addressing the Growing Integration of Artificial Intelligence (AI) in The Learning Process

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ABSTRACT

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This descriptive qualitative study examines the use of artificial intelligence (AI), particularly ChatGPT, in the learning process at Universitas Islam Negeri (UIN) Palopo, Indonesia, and identifies strategies for integrating AI into higher education responsibly. Data were collected through observation, semi structured interviews, and an open-ended questionnaire involving 16 lecturers and students with experience using AI in teaching and learning, selected through purposive sampling. Data were analyzed using the interactive model of Miles, Huberman, and Saldana. The findings show that AI has considerable potential to enhance the quality of learning by supporting independent study, improving digital literacy, and enabling more adaptive and personalized instruction, while also strengthening lecturer and students' interaction by freeing class time for deeper discussion. At the same time, participants raised concerns about limited technological literacy, the risk of overreliance on AI, and the absence of clear institutional policy on AI use. The study recommends that UIN Palopo and similar institutions develop structured digital literacy training and formal policies on the ethical use of AI, so that AI functions as a supportive partner rather than a substitute for the human and critical dimensions of higher education.

Keywords: *Artificial Intelligence in Learning, ChatGPT, Strategies Addressing AI*

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INTRODUCTION

Artificial Intelligence (AI) has developed rapidly and increasingly permeates various aspects of life, including education. AI technologies have entered the classroom, shaping teaching methods, assessment practices, and students' learning experiences through innovations such as adaptive learning, data analytics for personalized instruction, and intelligent systems for evaluating student performance. These developments are transforming the traditional paradigm of learning. Yet alongside these advances, AI also raises concerns among them the possibility that technology will replace part of the role of teachers and lecturers, unequal access to technology among students, and risks related to data security.

As a field of study, Artificial Intelligence first emerged as a concept at a scientific conference held at Dartmouth College, United States, in 1956, and has since evolved from a largely theoretical pursuit into a set of technologies embedded in everyday life (Haenlein & Kaplan, 2019). AI is commonly understood as a branch of computer science that enables machines to perform tasks associated with human cognition and perception seeing, hearing, processing language, and, increasingly, learning and adapting in ways that mimic human behavior (Pasaribu & Widjaja, 2022).

Educational institutions must develop a deep and responsive understanding of a world increasingly shaped by artificial intelligence in order to design learning experiences that meet the needs of future students. AI also supports individualized instruction and the development of e-learning platforms; AI enabled Learning Management Systems (LMS), for instance, can

anticipate learners' needs, process data efficiently, reduce administrative workload, and accelerate institutional decision making (Saputra, 2023). Amid this rapid technological advancement, higher education institutions must adapt wisely and integrate AI effectively to create superior learning experiences for future students (Kennedy, 2023), as part of a broader shift toward more innovative and sustainable models of higher education management (Akhmad et al., 2024).

Behind these positive impacts, however, lie challenges that must be addressed. The rapid growth of AI does not translate into uniformly rapid adoption across all areas of higher education, and its broader societal effects remain contested. On one hand, the McKinsey Global Institute estimates that approximately 400 to 800 million jobs could be displaced by AI and automation by 2030, even as 555 to 890 million new jobs are expected to be created over the same period (Bughin et al., 2017; Smithies, 2017). On the other hand, public sentiment toward AI has grown markedly more cautious: a Pew Research Center (2023) survey found that 62% of American adults believe AI will have a major impact on workers in general within the next two decades, a concern echoed in Indonesian public discourse (Anggraini, 2023). Governments are therefore encouraged to establish clear and forward-looking AI policies so that their countries are not left behind (Muchamad et al., 2020). In education specifically, excessive dependence on AI carries risks such as declining initiative in independent thinking, reduced literacy development, and a heightened risk of plagiarism particularly through AI based essay generation tools such as ChatGPT. There are also concerns that AI may substitute for human guidance on matters requiring ethical or religious judgment, aspects of learning that arguably should remain rooted in human interaction (Fauziyati, 2023).

Despite extensive discussion of AI's role in education, a gap remains in the strategic understanding of how AI can be integrated into higher education systems in ways that are sustainable and that preserve the essential role of educators. Several national studies have examined related themes. Masrichah (2023) reviewed the general threats and opportunities of AI across sectors such as privacy, labor markets, and healthcare, without focusing specifically on education. Safitri et al. (2023) examined AI's impact on the role of schoolteachers, recommending literacy-based strategies to preserve teacher student interaction, but centered on school rather than higher education contexts. Salsabilla et al. (2023) described how AI facilitates students' access to course materials and language learning in universities, while also raising concerns about competition in the job market and the reliability of AI-generated answers; and Sandy et al. (2023) reported that half of surveyed students perceived AI positively in the learning process. None of these studies, however, proposed concrete strategies that lecturers or institutions can implement to manage AI's growing role in higher education specifically.

International literature reflects similar patterns but has rarely examined Indonesian Islamic higher education specifically. Systematic and scoping reviews of ChatGPT in higher education report that students and educators generally view generative AI as beneficial for learning efficiency and self-regulated learning, but raise recurring concerns about academic integrity, overreliance, and the accuracy of AI-generated content (Salas-Pilco et al., 2023; Cotton et al., 2023). Large-scale surveys such as Chan and Hu (2023) and Ravšelj et al. (2025) the latter involving more than 23,000 students across over 100 countries similarly find that students value AI's accessibility and speed but express uncertainty about its reliability for classroom learning, while Lo et al. (2024) note that its effects on student engagement remain mixed across contexts. A search of Google Scholar and Scopus using the keywords "artificial intelligence," "ChatGPT," "higher education," and "learning strategies" for publications from 2020–2025 found no study that specifically examines strategies for managing the growing integration of AI within an Indonesian Islamic higher education context, which constitutes the novelty and contribution of the present study.

Understanding these opportunities and risks makes it possible to develop appropriate strategies that maximize the benefits of AI while minimizing its risks. This study is important for identifying which aspects of education can be meaningfully supported by AI and which human educational functions must be preserved. Specifically, this study aims to: (1) explore how lecturers and students at UIN Palopo perceive and experience the use of AI, particularly

ChatGPT, in the learning process; and (2) identify strategies that lecturers, students, and institutional stakeholders can adopt to integrate AI responsibly while safeguarding the human dimensions of higher education. This study is expected to contribute both empirically, by providing context specific evidence from an Indonesian Islamic higher education institution, and practically, by informing policy on the ethical and effective use of AI in learning.

METHODS

This study employed a descriptive qualitative design that documents information in narrative and visual rather than numerical form. Following Bogdan and Taylor as cited in Moleong (2000), qualitative research is an approach that collects descriptive data in the form of participants' spoken or written words and their observed behavior. As a naturalistic inquiry, this approach positions the researcher as the primary instrument, employs triangulated data collection, analyzes data inductively, and privileges meaning over generalization (Hamidi, 2004). Fieldwork was conducted to obtain data directly relevant to the research problem.

Participants were lecturers and students at UIN Palopo selected through purposive sampling, following criteria for identifying information rich cases in qualitative research (Creswell, 2013): individuals who have sufficient time and willingness to participate, who are directly and actively engaged in AI supported teaching or learning activities, who can provide information without external influence or manipulation, and who are willing to share their experiences openly. A total of 16 participants is represented in the excerpts reported in the Results section.

Data were collected using three complementary techniques. Observation was conducted directly to examine participants' use of AI and their behavior during the learning process, including face to face interactions. Semi structured interviews were used to obtain in

depth verbal responses from participants regarding their experiences, perceptions, and practices related to AI use. An open-ended questionnaire was additionally administered to reach a broader number of respondents efficiently and to strengthen the data obtained through interviews. The interview guide and questionnaire items were developed based on the study's research questions.

Data were analyzed using the interactive model developed by Miles, Huberman, and Saldana (2014), comprising three concurrent stages: data condensation, in which interview transcripts, observation notes, and questionnaire responses were organized and coded according to the three themes examined in this study (quality of learning, human skills, and AI as a support tool); data display, in which coded data were organized into thematic matrices to identify patterns across participants; and conclusion drawing and verification, in which emerging interpretations were iteratively checked against the data throughout the analysis process.

The credibility of the findings was supported through triangulation of data collection methods (observation, interviews, and open-ended questionnaires) and of data sources (multiple lecturers and students with varying levels of AI experience). Because this is a descriptive qualitative study rather than a mixed methods or quantitative design, findings are reported primarily in narrative form. Where quantifying language appears in the Results section, it reflects a qualitative characterization of patterns across the 16 participants, rather than a statistically representative percentage of a larger, unspecified population.

All participants were informed of the purpose and procedures of the study prior to data collection and participated voluntarily. To protect participants' identities, only two to three-letter initials are used throughout this manuscript, and no other identifying institutional information is disclosed.

RESULTS AND DISCUSSION

1. Improving the Quality of Learning through the Use of AI in the Learning Process

Lecturers and students offered varied perspectives on what constitutes high quality learning and how AI relates to it. According to FZ, high quality learning does not merely prioritize final outcomes such as grades or graduation, but centers on students' deep

understanding of the material; although FZ had not personally used ChatGPT, FZ recognized its potential as an easily accessible reference source that could support students' independent learning. BK described quality learning as one that maintains balance between theory and practice, requiring students to understand fundamental concepts while also observing how these concepts apply in real situation, a view echoed by KR, who associated learning quality with students' ability to apply acquired knowledge in real life or professional settings rather than theoretical content alone.

SS emphasized that high quality learning must provide space for reflection and feedback, allowing students to evaluate their own learning while receiving clear, constructive input from lecturers. Although SS had not used ChatGPT, SS believed it could complement the lecturer's role by handling students' basic questions, freeing lecturers to focus on more in-depth classroom discussion, a view shared by a substantial minority of participants who had not personally used ChatGPT but nonetheless saw potential value in it for this purpose.

Several participants linked ChatGPT directly to independent learning. FZ noted that ChatGPT has significant potential to continually support students' independent learning, a view shared by SS, who felt the technology could help students better understand learning material over time. MH, who had used ChatGPT in class, reported observing an improvement in students' understanding, attributing this to the immediate additional explanations ChatGPT could provide for difficult concepts. The majority of participants who had used ChatGPT shared this assessment. DIM observed that ChatGPT made the learning process more adaptive, allowing students to learn at their own pace and ask questions as needed, which over time fosters more autonomous learners. BH, reflecting on motivation, reported observing increased student engagement and enthusiasm after ChatGPT was introduced, including among previously passive students.

2. Enhancing Human Skills through the Use of AI in the Learning Process

Participants identified several ways that AI use intersects with the development of human skills. Regarding how such skills can be strengthened in AI-supported learning, FZ suggested that skills develop most effectively when learning is active and practice-based, such as through simulations or real-world projects, with ChatGPT serving as a tool to support independent learning. BK highlighted the importance of specific, constructive feedback that helps students recognize both strengths and areas for improvement, while KR emphasized cultivating interpersonal skills (teamwork, communication, and leadership) through collaborative methods such as group work and class discussion.

Among participants who had used ChatGPT, several new skills were reported: DIM described gains in data analysis and interpretation; ASA reported an improved ability to prepare learning materials efficiently, using ChatGPT to summarize complex concepts into simpler explanations; BH noted an enhanced ability to provide faster and more accurate feedback; MG described acquiring new skills in designing interactive learning modules; and ER reported becoming more skilled at delivering concise, effective explanations.

Participants who had not yet used ChatGPT also anticipated skill gains. SM expected that future use would build adaptability to new technologies and expand understanding of new teaching methods, while KR suggested that using ChatGPT could sharpen written communication skills, since formulating precise prompts requires a clarity that, in turn, supports clearer instructional writing.

Participants also reflected on the relationship between ChatGPT use and critical thinking. FZ noted that while AI tools can help students gather initial information, students must still analyze this information in depth rather than accept it at face value, which itself trains critical evaluation. FS, who had not used ChatGPT, suggested that students could learn to recognize potential biases or shortcomings in AI-generated responses, treating this as an opportunity to practice source evaluation. All participants who commented on this issue expressed some degree of concern about ChatGPT's impact on critical thinking. MH, an experienced user, explained that ChatGPT is useful for initiating analytical thinking, for example, generating initial ideas but stressed that it should serve only as a starting point; without further evaluation

of sources and answers by students themselves, he was concerned that overreliance could undermine the development of independent analytical skills.

3. Using AI as a Support Tool in the Learning Process

Participants described several ways of assessing whether ChatGPT effectively supports learning. KR, who had not personally used ChatGPT, suggested effectiveness could be measured by whether students became more independent and efficient in completing assignments. FZ proposed assessing effectiveness through how well students understood material after using AI, for instance, whether they could explain difficult concepts more clearly or perform better on assignments and in class discussion. BK suggested gathering direct student feedback on whether ChatGPT helped their understanding or built their confidence, while SS, who had not used ChatGPT, proposed that increased participation in class discussion could serve as an indirect indicator of effectiveness.

Participants also described specific practices for verifying the accuracy of ChatGPT's output: comparing its answers against credible books or journals; comparing results with peers' discussion or research findings; encouraging students to seek independent verification through additional sources; cross-checking against textbooks or verified journals even while valuing ChatGPT's speed and clarity; and using ChatGPT primarily to generate initial ideas while instructing students never to accept its output without verification.

On designing and adapting learning materials, participants reported that ChatGPT could broaden and speed up access to reference materials, assist in organizing learning frameworks or outlines, generate ideas for discussion activities, case studies, or simulations, and help identify current information or trends relevant to course material. FS, despite not having used ChatGPT personally, suggested it could help design more inclusive materials that accommodate diverse student backgrounds and abilities. FZ and SM both noted that ChatGPT could help adapt materials to different learning styles, for example, providing diagrams for visual learners or detailed text for those who prefer reading.

Participants with direct experience elaborated further: MH described using ChatGPT to tailor materials to students' level of understanding, allowing them to learn at their own pace; HK highlighted its capacity to generate varied explanations (brief or detailed, using analogies, or through additional reading) for different learning styles; and AP described using ChatGPT to personalize assignments to individual students' levels of understanding.

DISCUSSION

1. Improving the Quality of Learning: A Technology Acceptance Perspective

Taken together, the findings on learning quality can be understood through the lens of the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use shape an individual's intention to adopt a technology (Davis, 1989). Participants' emphasis on deep understanding, balanced theory practice learning, and space for reflection (FZ, BK, KR, SS) reflects a view of learning quality that is fundamentally pedagogical rather than technological; AI's value, in this framing, lies not in the tool itself but in its perceived usefulness for supporting existing educational goals. This mirrors findings from large-scale international studies, which similarly report that students and staff view generative AI positively primarily insofar as it demonstrably supports learning outcomes rather than as an end in itself (Chan & Hu, 2023; Ravšelj et al., 2025).

Notably, several participants who had not personally used ChatGPT (FZ, SS) nonetheless expressed confidence in its potential value consistent with the UTAUT framework's proposition that social influence and expected performance can shape behavioral intention even prior to direct use (Venkatesh et al., 2003). This suggests that positive institutional discourse around AI, rather than firsthand experience alone, may be driving favorable perceptions at UIN Palopo. At the same time, this pattern raises a caution: perceptions formed without direct use may be less attuned to AI's practical limitations, such as the accuracy concerns raised elsewhere in the findings.

The finding that the majority of ChatGPT-using participants associated the tool with enhanced independent learning is broadly consistent with prior Indonesian studies reporting similar benefits for personalized learning and classroom efficiency (Manuaba et al., 2024; Marlin et al., 2023; Pontjowulan, 2023). This convergence strengthens confidence that AI's contribution to learning quality is not specific to UIN Palopo but reflects a broader pattern in Indonesian higher education. Unlike some international studies that report more contested or mixed effects of ChatGPT on engagement depending on discipline and implementation quality (Lo et al., 2024), the present study's participants expressed uniformly positive views a pattern that should be interpreted cautiously given the self-selected nature of the sample. Lecturers must still ensure that information provided by ChatGPT is verified against valid academic sources to prevent misunderstanding (Hadian & Rahmi, 2023), and the successful integration of AI for learning quality ultimately depends on adequate technological infrastructure and clear institutional policy support (Rohmawaty et al., 2024).

2. Enhancing Human Skills: Collaboration between Technology and Human Capability

The findings on human skills point to a central theme in the technology adoption literature: the benefits of a new technology are realized not automatically, but through deliberate human effort to integrate it into existing practice (Khairun et al., 2023). Participants' descriptions of skill development active, practice based learning; constructive feedback; collaborative development of interpersonal skills; and specific technical skills such as data analysis, materials preparation, and interactive module design among ChatGPT users together suggest that AI functions less as an autonomous educational agent and more as a catalyst that amplifies existing pedagogical practices (Mardikawati et al., 2023).

The concerns participants raised about critical thinking echo a well documented tension in the international literature: while generative AI can support the initiation of analytical tasks, overuse without deliberate scaffolding risks weakening students' independent evaluative capacity (Cotton et al., 2023). This tension is consistent with what Husnaini and Madhani (2024) describe among Indonesian university students, many of whom valued ChatGPT's speed and convenience for completing coursework while simultaneously expressing unease about its implications for genuine learning and academic integrity. MH, an experienced user, explicitly limited ChatGPT's role to a starting point for analytical thinking, illustrating a self regulatory strategy that may be worth formalizing into institutional guidance rather than left to individual discretion.

Overall, these findings support the view that educational transformation through AI is not primarily a matter of adopting new technology, but of changing mindsets and educational culture (Pustikayasa et al., 2023; Andriyani et al., 2024). The skill gains reported by participants who had already integrated ChatGPT into their practice compared with the more speculative expectations of non users suggest that structured, hands-on training may be more effective than passive exposure or general awareness campaigns in building AI related competencies among lecturers and students alike.

3. AI as a Support Tool: Balancing Innovation with Verification

The verification practices participants described cross checking ChatGPT's output against textbooks, journals, and peer discussion indicate an encouraging degree of critical engagement with AI output among this sample. This is a meaningful finding, since concerns about the accuracy and reliability of generative AI output are among the most consistently reported challenges in the international literature on ChatGPT in education (Salas-Pilco et al., 2023; Cotton et al., 2023). That participants at UIN Palopo appear to have independently developed comparable verification habits without this being framed by the university as an explicit policy or training requirement suggests an opportunity: formalizing these informal practices into structured guidance could extend their benefits to lecturers and students who have not yet developed such habits on their own.

At the same time, the consistent emphasis on adapting materials to different learning styles and needs reflects AI's perceived usefulness for personalization, a widely reported benefit in the literature (Chan & Hu, 2023), but also raises the question of whether AI driven personalization adequately substitutes for the professional judgment lecturers exercise when

adapting materials themselves. The findings suggest a preference among participants for AI assisted personalization used alongside, rather than instead of, lecturer judgment, consistent with the study's overall framing of AI as a support tool rather than a replacement for human educators (Hadian & Rahmi, 2023).

CONCLUSION

This study indicates that AI, particularly ChatGPT, holds considerable potential to strengthen learning at UIN Palopo by supporting independent study, improving digital literacy, and enabling more adaptive, personalized instruction, while also freeing class time for deeper lecturer and student engagement. Realizing this potential, however, depends on addressing three interrelated conditions: adequate technological infrastructure, stronger digital literacy among both lecturers and students, and clear institutional policy governing the ethical use of AI in teaching, learning, and assessment. Encouragingly, several participants in this study had already developed informal practices for verifying AI generated content and using AI as a starting point rather than a substitute for independent analysis practices that, if formalized into institutional guidance and training, could extend their benefits more broadly across the university. AI is best positioned not as a replacement for lecturers or for students' own critical engagement, but as a strategic partner that, when integrated thoughtfully, can help create a more inclusive, adaptive, and responsive higher education experience.

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