

Artificial Intelligence Awareness and Readiness among Undergraduate Students in Islamic Higher Education

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ABSTRACT

This study investigates the levels of awareness and readiness toward Artificial Intelligence (AI) among undergraduate students in Islamic higher education, focusing on English Language Education students at UIN Raden Intan Lampung. Using a quantitative survey design, data were collected from 150 students through a structured questionnaire that measured four dimensions of AI literacy: awareness, usage, evaluation, and ethics. Descriptive and inferential statistics were employed to analyze the findings. The results indicate that students demonstrated relatively high awareness of AI applications, particularly in recognizing its potential for academic support. However, their ability to evaluate AI-generated outputs was limited, with many reporting low confidence in judging accuracy and bias. Usage was moderate, showing frequent reliance on AI tools for grammar correction and information retrieval but without strategic application. Ethical awareness was also moderate, with students expressing concern about plagiarism but less knowledge of issues such as algorithmic fairness and data privacy. Differences were found across year levels and prior AI experience, with senior students and those with exposure outside the classroom displaying higher readiness. The study highlights the urgent need for targeted curriculum reform, faculty training, and institutional policies that integrate AI literacy within an ethical and culturally grounded framework.

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Introduction

Artificial Intelligence (AI) is one of the most influential technologies of the twenty-first century. Its rapid progress has begun to reshape both industries and higher education. The emergence of Generative AI (GAI), driven by large language models, represents a major shift. Unlike earlier forms of AI that were limited to automating repetitive tasks, GAI can generate original content, simulate human-like conversations, and provide instant feedback (Hu & Shao, 2025). These capabilities make AI a disruptive force that requires Higher Education Institutions (HEIs) to evaluate their readiness for technological integration (Hastomo et al., 2024).

In higher education, AI influences both teaching and administration. In teaching, AI supports more adaptive and personalized learning (Antony & Ramnath, 2023). It can

create materials that match students' needs, provide timely feedback, and enhance engagement. This is especially useful in language learning, where students progress at different speeds. In administration, AI can simplify grading, enrollment, and scheduling. It allows faculty to spend more time on mentoring, research, and curriculum design. Chatbots and virtual assistants also provide quick support to students and staff. Yet, this dual role produces a challenge. While AI fosters personalized learning, it may also push institutions toward standardization when used mainly for efficiency (Safitri & Fithriani, 2024). Leaders must balance technological efficiency with the humanistic mission of universities, which is to cultivate critical, creative, and ethical growth.

The growing importance of AI across professions also requires HEIs to prepare graduates with strong AI competence. Employers in fields such as healthcare, education, finance, and technology now expect graduates to have AI literacy (Rapanta, 2025). Universities must go beyond using AI for internal purposes and integrate it into their programs. Students should be given the chance to experiment with AI, understand its limitations, and reflect on its ethical dimensions (Hastomo et al., 2025). This preparation will help them become not only users of AI but also critical evaluators and responsible professionals.

Despite its benefits, AI brings significant challenges. Issues of data privacy, algorithmic bias, and academic integrity are central concerns (Mandasari et al., 2025). The growth of GAI has also raised fears of plagiarism and misuse. Universities have responded in different ways, with some banning AI tools and others promoting guided use. A key difficulty is that AI develops faster than institutional policy. Many universities respond reactively, which creates confusion among students and staff (Haroud & Saqri, 2025). A consistent and principled framework is needed to maximize the benefits of AI while reducing its risks.

In Indonesia, the government has introduced policies to integrate AI into education as part of a wider digital transformation agenda (Sumakul & Hamied, 2023). These policies aim to enhance educational quality and prepare students for the global digital economy. However, implementation is hindered by major challenges. As a large archipelago, Indonesia experiences significant inequality in digital infrastructure. Rural regions often lack reliable internet access and technological resources compared with urban centers. This digital divide risks worsening educational inequality if AI adoption benefits only privileged areas. Initiatives such as satellite internet and unplugged curricula are being explored, but infrastructural challenges remain serious obstacles.

Another difficulty is the lack of AI literacy among both students and teachers. Many educators report feeling unprepared to use AI in their teaching. Professional development programs and curriculum reforms are needed to strengthen both basic digital competence and advanced AI skills (Zulianti et al., 2024). Current policies are ambitious but often disconnected from local realities, creating a gap between policy and practice. While optimism about AI's potential is strong, it must be matched with realistic strategies that address inequality and capacity-building.

Indonesia also has a distinctive network of Islamic Higher Education Institutions (IHEIs), which combine academic, cultural, and religious missions. For these

institutions, adopting AI involves not only technical but also cultural and ethical considerations. Islamic pedagogy emphasizes the teacher's role as a guide for intellectual, moral, and spiritual development (Helmiatin et al., 2024). A model that relies too heavily on technology risks undermining this tradition. AI should therefore serve as a supportive tool that empowers teachers rather than replaces them. By automating routine tasks, AI can give teachers more time to focus on their core responsibilities as mentors and role models.

The integration of AI in IHEIs must also align with Islamic ethical principles. Global concerns such as fairness, justice, and transparency take on additional significance when viewed through Islamic values. Imported AI tools may carry assumptions that do not fit local educational contexts (Amin, 2023). For this reason, IHEIs need to adapt or design AI applications that reflect their cultural and religious principles. This ensures that technological advancement strengthens rather than weakens their educational mission.

The success of AI integration also depends on students' awareness and readiness. Awareness refers to basic understanding of AI functions, uses, and ethical issues. Readiness goes further, covering technical competence, critical evaluation, and ethical application in academic and professional settings. Research often measures these elements in terms of awareness, usage, evaluation, and ethics (Narayan, 2024). Global studies reveal that students use AI tools such as ChatGPT and Grammarly for many academic purposes. Yet frequent use does not always mean literacy. Many students report low confidence and limited knowledge of risks and biases (Al-Abdullatif, 2025). This shows a gap between surface use and deeper understanding. Without structured guidance, students may treat AI as a shortcut rather than a tool for critical learning.

Differences in readiness also appear across academic disciplines. STEM students often report greater confidence with AI due to exposure in their courses (Casal-Otero et al., 2023). In contrast, students from non-technical fields, such as humanities and education, may feel less prepared. This gap has serious implications for employability. Non-technical graduates who lack AI skills risk being disadvantaged in an AI-driven job market. English Language Education students are a group particularly at risk, as their curricula often provide limited opportunities to develop AI literacy.

Although AI is reshaping higher education, little research has examined how students in non-technical programs and culturally specific settings perceive and prepare for these changes (Chang et al., 2023; Delello et al., 2025; Metwally & Bin-Hady, 2025a, 2025b; Smolansky et al., 2023). Islamic universities face the added challenge of integrating technology while protecting traditional values. This creates a significant research gap in understanding student awareness and readiness in IHEIs.

The present study addresses this gap by focusing on English Language Education students at UIN Raden Intan Lampung. The guiding question is: What are the levels of awareness and readiness of undergraduate students in Islamic higher education toward the use and implementation of AI?

This research holds theoretical, practical, and broader importance. Theoretically, it contributes empirical evidence to the limited body of work on AI in Islamic education. Practically, it provides insights for policymakers and administrators in Indonesia,

helping them design training programs and curricula that enhance AI literacy. More broadly, the study enriches global discussions by offering perspectives from a non-Western, faith-based context. These insights can guide other institutions worldwide in adopting AI in ways that respect cultural and ethical values.

Method

Research Design

This study employed a quantitative research design using a survey method (Creswell & Creswell, 2018). The purpose of this design was to obtain measurable data on the levels of awareness and readiness of undergraduate students in relation to the use of Artificial Intelligence (AI) in Islamic higher education. A survey design was selected because it allows the collection of data from a relatively large group of participants in a systematic manner. It is also effective in capturing perceptions, attitudes, and self-reported competencies that are central to the constructs of AI awareness and readiness. By applying this design, the study aimed to provide a reliable description of students' current conditions and to identify patterns that may inform future institutional strategies.

Participants

The participants were undergraduate students enrolled in the English Language Education program at UIN Raden Intan Lampung. The population was chosen because these students represent a group of non-technical learners who are increasingly expected to engage with AI tools in their academic and professional lives. A purposive sampling technique was used to ensure that the participants matched the criteria relevant to the study. The inclusion criteria required students to be enrolled in at least the second semester, so they had prior experience with academic tasks where AI tools could potentially be applied.

A total of 150 students participated in the study. The sample size was considered adequate to achieve reliable statistical analysis and to represent the diversity within the program. The participants varied in terms of gender, age, and year of study, which provided a comprehensive overview of the student body. All participants took part voluntarily and were informed about the purpose of the study, the procedures involved, and their rights to confidentiality and withdrawal. Ethical approval was obtained from the institutional review board before data collection began.

Instrument

The main instrument of this study was a structured questionnaire that was carefully designed based on established frameworks of AI literacy and readiness (Jin et al., 2025). The questionnaire consisted of items that reflected four major dimensions, namely awareness, usage, evaluation, and ethics. The awareness dimension explored the extent to which students understood the concept of AI, recognized its common applications, and identified both its potential and limitations in academic settings. The usage dimension focused on students' ability to employ AI tools effectively to support learning tasks, including writing, information retrieval, and data analysis. The

evaluation dimension examined their capacity to assess the reliability, quality, and possible biases of AI-generated outputs. Finally, the ethics dimension addressed students' knowledge of responsible use, particularly issues related to plagiarism, fairness, and data security.

All items were presented in the form of statements and measured using a five-point Likert scale ranging from "strongly disagree" to "strongly agree." This format was selected to allow participants to express varying degrees of agreement, which provided richer data for analysis compared with dichotomous responses. To ensure content validity, the questionnaire was reviewed by three experts in the fields of educational technology, applied linguistics, and Islamic education. Their feedback helped refine the wording and clarity of the items, as well as confirm their alignment with the research objectives. A pilot test was then conducted with 30 students outside the main sample to evaluate the practicality of the instrument. The pilot confirmed that the items were clear, comprehensible, and reliable. Reliability analysis using Cronbach's alpha showed that all dimensions achieved coefficients above 0.80, which indicated strong internal consistency and confirmed the suitability of the instrument for the main study.

Data Collection

Data collection took place during the second semester of the 2024–2025 academic year. The questionnaire was distributed online through the university's learning management system to ensure accessibility for all participants. Students were given two weeks to complete the questionnaire. Reminders were sent after the first week to encourage participation and increase the response rate.

Before completing the questionnaire, participants were provided with an informed consent form that explained the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. They were assured that no personal identifiers would be used in reporting the results. Only aggregated data would be analyzed and presented.

Data Analysis

The data were analyzed using descriptive and inferential statistics. Descriptive statistics, including mean scores, standard deviations, and percentages, were used to provide an overview of the levels of AI awareness and readiness across the four dimensions. These descriptive findings allowed the identification of general trends in student responses.

Inferential statistics were employed to explore potential differences across subgroups of students. Independent-sample t-tests and one-way analysis of variance (ANOVA) were conducted to examine variations in awareness and readiness based on demographic variables such as gender, year of study, and prior exposure to AI tools. Post-hoc tests were used where appropriate to identify specific group differences.

The results of the statistical analysis were interpreted in light of the study objectives and the broader context of AI integration in higher education. The findings were used to draw conclusions about the current state of AI awareness and readiness

among English Language Education students and to provide recommendations for curriculum development and institutional policies.

Results

Descriptive Findings

The analysis of student responses provides an overview of their levels of AI awareness and readiness. Table 1 summarizes the descriptive statistics across the four main dimensions of the instrument.

Table 1. Descriptive Statistics of AI Awareness and Readiness Dimensions

Dimension	Number of Items	Mean	Standard Deviation	Interpretation
Awareness	10	3.85	0.62	High
Usage	8	3.40	0.71	Moderate
Evaluation	7	3.05	0.74	Low–Moderate
Ethics	8	3.45	0.68	Moderate
Overall	33	3.44	0.69	Moderate Readiness

The results in Table 1 reveal that students' strongest area was AI awareness, with a mean score of 3.85, suggesting that most students are familiar with the concept of AI and can recognize its common applications in academic life. The ethics dimension also showed a moderate mean score of 3.45, indicating that students have some understanding of issues such as plagiarism and fairness but less knowledge about broader concerns like algorithmic bias or data privacy.

The usage dimension scored moderately at 3.40, which shows that students often use AI tools in their studies but remain unsure about their own competence. The lowest dimension was evaluation, with a mean score of 3.05, highlighting students' limited ability to assess the reliability and quality of AI outputs. The overall mean score of 3.44 points to a general level of moderate readiness among participants.

Differences Across Year of Study

To explore variations by academic level, the results were analyzed according to students' year of study. Table 2 presents the differences.

Table 2. Differences in AI Awareness and Readiness by Year of Study

Year of Study	N	Mean Overall Score	Standard Deviation	Interpretation
2nd Semester	40	3.25	0.65	Lower Readiness
4th Semester	45	3.38	0.70	Moderate Readiness
6th Semester	40	3.54	0.67	Moderate–High
8th Semester	25	3.62	0.72	Higher Readiness

The data indicate a steady increase in readiness from second-semester to eighth-semester students. Senior students reported greater familiarity and confidence, which may be attributed to broader exposure to academic tasks that encourage the use of digital and AI-based tools. Junior students, in contrast, demonstrated lower readiness, possibly due to limited experience and fewer opportunities to engage with AI in coursework.

Differences by Prior AI Experience

The study also investigated the role of prior AI exposure in shaping readiness levels. Table 3 outlines the results.

Table 3. Differences in AI Awareness and Readiness by Prior AI Exposure

Prior AI Experience	N	Mean Overall Score	Standard Deviation	Interpretation
Yes	80	3.65	0.66	Higher Readiness
No	70	3.20	0.71	Lower Readiness

Students who reported prior experience with AI tools, such as using chatbots or translation software outside formal education, achieved higher readiness scores compared to those without experience. This suggests that informal exposure plays a significant role in shaping competence and confidence in AI use.

Discussion

The findings suggest that students in Islamic higher education demonstrate a solid foundation of awareness about AI, particularly regarding its functions and potential applications in academic life. This is consistent with global studies indicating that university students are increasingly familiar with AI concepts (Walter, 2024). However, while students recognize AI as a useful tool, their understanding often remains limited to surface-level awareness. Many cannot explain how AI systems work or anticipate their limitations. Such shallow awareness underscores the need for formal instruction on AI literacy within non-technical programs (Cardon et al., 2023).

The moderate mean score for usage reveals that students frequently employ AI for tasks such as grammar correction, translation, and idea generation. The reliance on AI tools demonstrates their integration into daily learning practices. Yet, students' reported lack of confidence shows that their usage is often instrumental rather than strategic. They may use AI for convenience but lack the skills to maximize its functions or verify its accuracy. This observation mirrors international research where students adopt AI tools quickly but without the necessary competence to use them critically and responsibly (Knoth et al., 2024). For English Language Education students, this trend is particularly concerning. Language learning involves creativity, reflection, and critical thinking, which cannot be replaced by AI-generated outputs (Andewi et al., 2025). Without structured training, students risk using AI merely as a shortcut rather than as a support for deeper learning.

The lowest score in evaluation reflects a critical gap. Students showed limited ability to judge the accuracy and reliability of AI-generated information. This gap raises concerns for academic integrity, as uncritical acceptance of AI outputs may lead to errors, misinformation, or overdependence on automated tools. In higher education, the development of evaluative skills is central to fostering independent thinkers (Bewersdorff et al., 2025). The weak performance in this area suggests that curricula must include activities that challenge students to assess AI critically and compare it with other sources of information. In the context of Islamic higher education, the absence of

strong evaluative skills also raises ethical implications. If students are unable to evaluate AI content critically, they may unknowingly rely on biased or inappropriate information, which could undermine both academic and moral objectives. Integrating evaluation skills with Islamic perspectives on critical reflection and ethical judgment could provide a culturally grounded approach to addressing this gap.

The results also show that students have moderate awareness of ethical issues. They recognize plagiarism as a concern, yet their understanding of broader issues such as data privacy and algorithmic bias remains weak. This reflects the absence of clear institutional policies and training programs (Ding et al., 2024). Students' uncertainty about what constitutes acceptable AI use suggests that universities must provide explicit guidance. For Islamic Higher Education Institutions, ethical integration is particularly important. Policies should not only reflect global standards of fairness and justice but also be framed in alignment with Islamic principles. By grounding AI policies in both academic and religious values, institutions can ensure that students approach technology with a sense of responsibility and integrity.

The differences observed across year levels highlight the developmental nature of AI readiness. Senior students displayed greater competence, likely because they have faced more complex academic tasks requiring digital tools. The lower scores of junior students suggest the importance of introducing AI literacy early in the curriculum. By embedding AI-related content from the first year, universities can support students in building skills progressively. The influence of prior AI experience further emphasizes the role of informal learning. Students who had engaged with AI outside the classroom were significantly more prepared than their peers. This finding suggests that formal education should not assume equal starting points for all students. Instead, institutions should design programs that acknowledge these disparities and provide additional support for students with limited exposure (Rožman et al., 2025).

The results hold specific implications for Islamic higher education. The findings confirm that AI can support both teaching and learning but must be integrated in ways that preserve the central role of the teacher as a guide for intellectual and spiritual development (Zhang & Zhang, 2024). AI should be viewed as a supportive tool that reduces administrative burdens and enhances personalized learning, while teachers remain responsible for moral and ethical guidance. The gaps in evaluation and ethics highlight the importance of culturally sensitive approaches. Islamic universities can position AI literacy within a framework that emphasizes justice, fairness, and responsible use. This would allow students to not only develop technical skills but also to integrate technological competence with Islamic values. In this way, AI adoption can strengthen, rather than weaken, the educational mission of IHEIs.

The study demonstrates that students in Islamic higher education possess high awareness of AI and moderate readiness overall. While they frequently use AI tools, their confidence and evaluative skills remain limited. Ethical awareness exists but is incomplete, reflecting the absence of institutional policies and training. Senior students and those with prior AI experience report higher readiness, which highlights the value of structured curricular integration and experiential learning. These findings underscore

the need for Islamic Higher Education Institutions to adopt a balanced approach. Curriculum reform, faculty training, and clear ethical guidelines are essential to ensure that AI is integrated effectively and responsibly. By aligning technological adoption with Islamic values, IHEIs can prepare students not only as competent users of AI but also as critical, ethical, and reflective graduates ready to navigate an AI-driven world.

Conclusion

The study revealed that undergraduate English Language Education students at UIN Raden Intan Lampung demonstrated relatively high awareness of AI but only moderate overall readiness. Awareness was the strongest dimension, while evaluation emerged as the weakest, indicating that students often recognized AI applications but lacked the skills to critically assess their outputs. Usage was frequent but accompanied by low confidence, suggesting instrumental rather than strategic engagement with AI tools. Ethical awareness was present but incomplete, particularly regarding broader concerns such as algorithmic bias and data privacy. Variations across year levels and prior AI exposure highlighted the importance of structured curricular integration and experiential learning. These findings suggest that while students are already engaging with AI, their readiness for responsible and critical use remains uneven, requiring targeted institutional support.

The implications of this research are significant for Islamic higher education. Institutions must design policies, curricula, and professional development programs that strengthen students' critical evaluation and ethical understanding, while ensuring that AI integration aligns with Islamic values of justice, fairness, and responsibility. However, this study was limited to a single institution and a specific student group, which restricts the generalizability of the findings. Future research should expand to multiple Islamic higher education institutions and employ mixed-method approaches to capture deeper insights into students' perceptions and practices. It is recommended that universities introduce AI literacy progressively from early semesters, provide faculty with adequate training, and establish clear guidelines for ethical AI use. By doing so, Islamic higher education institutions can prepare graduates who are not only competent users of AI but also critical and responsible thinkers capable of navigating the complexities of an AI-driven society.

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