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Exploring Universitas Islam Students' Level of Dependence on AI Technology in Completing Academic Writing Assignments

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ABSTRACT

This study explores the level of dependence of fourth-semester English Education students at Universitas Islam Makassar (UIM) on artificial intelligence (AI) technology in completing academic writing assignments. Drawing on Media System Dependence Theory, dependence is examined across three dimensions: cognitive, behavioral, and emotional. An explanatory sequential mixed-methods design was used. Quantitative data were collected from all 14 eligible students through a 12-item Likert-scale questionnaire and analyzed descriptively; three students who consented were then interviewed, and the transcripts were analyzed thematically. The questionnaire showed a moderate to high level of dependence, with 78.6% of respondents in the moderate to very high categories. Cognitive dependence was highest (M = 3.41, high), followed by emotional (M = 3.21) and behavioral dependence (M = 3.04), both moderate. The interviews explain these patterns: students found it difficult to generate ideas and structure arguments without AI, used tools such as ChatGPT, Claude, Perplexity, and Gemini habitually across writing stages, and reported anxiety and reduced confidence when AI was unavailable, especially during examinations. Despite awareness of the risks to critical thinking, students continued to use AI because of academic pressure and efficiency demands, although one participant showed strategic, evaluative use. The findings point to the need for AI-literacy and metacognitive support and for institutional guidelines grounded in the Islamic values of amanah, tadabbur, and ijtihad, so that AI functions as a supportive means (wasīlah) rather than a substitute for intellectual effort.

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INTRODUCTION

The rapid development of artificial intelligence (AI) has changed how people interact with information and communication, and higher education is no exception (Kaharuddin et al., 2024). Platforms such as ChatGPT, QuillBot, Grammarly, Gemini, and Claude have become part of the contemporary academic writing ecosystem, offering real-time feedback on grammar, sentence structure, vocabulary, and style. Uptake among students is considerable. In a study of 399 students from six universities in Hong Kong, Chan & Hu (2023) found that 66.7% of respondents had used generative AI technologies such as ChatGPT at least once, most commonly for writing assistance, brainstorming, information retrieval, and research support.

Research suggests that these tools can benefit writing development. Pujawiyanti & Zaman Fadhly (2025) reported that the use of AI in language learning can improve discourse coherence, grammatical accuracy, and lexical richness. Zumrotul Fauziah & Sri Minarti (2023) found that AI-assisted applications help Islamic education students construct paragraphs, improve sentence structure,

and paraphrase more effectively, and Syafruddin (2025) reported that integrating AI writing tools can improve the quality of EFL students' writing.

At the same time, the growing integration of AI has raised concerns about dependence. Participants in Chan & Hu (2023) study valued generative AI but worried that excessive reliance could reduce critical thinking and weaken their willingness to generate ideas independently. Tian & Zhang (2025), studying 580 Chinese university students, found that greater AI dependence significantly lowered critical thinking, with cognitive fatigue partially mediating the relationship. Gerlich (2025), in a mixed-methods study of 666 participants, found a significant negative correlation between frequent AI use and critical thinking, mediated by cognitive offloading. Cotton et al. (2024) likewise argue that heavy use of AI-generated text may discourage independent idea generation and weaken students' ability to evaluate and refine their own arguments. Taken together, this literature points to a paradox: AI improves writing efficiency and surface quality while threatening the independent reasoning on which authentic learning depends.

The issue is more complex in Islamic higher education, where technology use is expected to align with ethical and spiritual values. The Qur'anic reminder that human beings "have been given only a little knowledge" (QS. Al-Isra [17]: 85) can be read as a call for intellectual humility, positioning AI as a supportive means (wasīlah) rather than a substitute for human reasoning. Three values are especially relevant to academic writing: amanah (trust and responsibility in producing knowledge), tadabbur (deep reflection), and ijtihad (independent reasoning) (Shah, 2014). Heavy dependence on AI that results in work not genuinely reflecting a student's own understanding can therefore be seen as a concern for academic integrity and, in this context, as a possible breach of amanah.

This study is grounded in Media System Dependence Theory (MDT), which holds that individuals become dependent on a media system to fulfil their information needs and goals, and that dependence grows stronger as the system serves more functions for them (Ball-Rokeach & DeFleur, 1976). MDT distinguishes understanding goals (comprehending content), orientation goals (deciding how to approach and structure tasks), and play goals (reducing anxiety and stress). Applied to academic writing, dependence on AI is conceptualized across three dimensions: cognitive dependence, a diminished ability to think independently, build arguments, and analyze critically without AI (Gerlich, 2025), behavioral dependence, habitual and automatic consultation of AI at every writing stage regardless of need (Bui & Tong, 2025) and emotional dependence, anxiety, reduced confidence, or distress when writing without AI (Alhur et al., 2025) .

Despite this growing body of work, three gaps remain. First, many studies either measure the level of dependence quantitatively or describe experiences qualitatively, with limited integration of the two. Second, few studies have examined AI dependence in Indonesian Islamic higher education, where technology practices may be shaped by Islamic educational values (Siregar et al., 2025). Third, it is not well understood how numerical patterns of dependence correspond to students' lived experiences. By bridging these gaps, this study contributes theoretically to the contextualization of Media System Dependence Theory within Islamic higher education and offers practical insights for educators to foster ethical and balanced AI literacy among language learners. To address these gaps, this article reports an explanatory sequential mixed-methods study of fourth-semester English Education students at Universitas Islam Makassar (UIM). It asks: (1) how do students perceive their level of dependence on AI technology in completing academic writing assignments, and (2) how do they experience that dependence across its cognitive, behavioral, and emotional dimensions?

METHOD

This study used an explanatory sequential mixed-methods design (Creswell, 2018). In the first phase, quantitative data were collected through a Likert-scale questionnaire to describe the level of AI dependence; in the second phase, semi-structured interviews were conducted to explain and contextualize the quantitative patterns. The design rests on a pragmatist stance that treats the research questions as the guide for choosing methods (Johnson & Onwuegbuzie, 2004), which suits a phenomenon that is both measurable and subjectively experienced.

The research was conducted in the English Education Department of UIM. For the quantitative strand, total sampling was applied to all 14 active fourth-semester students of the 2024 cohort in the 2026 academic year; all 14 were female. These students had completed Paragraph Writing, Essay Writing, and Academic Writing courses, so they had enough experience to reflect on their writing

practices, and fourth-semester students are also expected to show greater metacognitive awareness (Flavell, 1979). For the qualitative strand, an interview-willingness item was placed at the end of the questionnaire. Only three respondents explicitly consented and were available, so these three (coded R08, R010, and R03) became the interview participants. A purposive, maximum-variation logic was intended (Palinkas et al., 2015), but the final selection was in practice determined by consent; the three participants nevertheless differed in self-rated dependence, preferred tools, and most-used writing stage.

The questionnaire contained 12 bilingual (English–Indonesian) items rated on a five-point scale (1 = strongly disagree to 5 = strongly agree), with four items for each dimension: cognitive (CD-P1 to CD-P4), behavioral (BD-P1 to BD-P4), and emotional (ED-P1 to ED-P4). It was adapted from an instrument developed in another Indonesian Islamic university context and operationalized through MDT. The interview guide consisted of 12 main questions that moved from concrete descriptions of AI use to reflections on its meaning, and each interview lasted 20–30 minutes. The questionnaire was distributed face-to-face and online through Google Forms. Interviews were audio-recorded with permission and transcribed verbatim; they were conducted in Indonesian, and the excerpts reported below were translated into English. Informed consent, confidentiality, and the right to withdraw were ensured. It should be noted that formal instrument validation (expert judgment, pilot testing, or reliability estimation such as Cronbach's alpha) was not conducted, so the psychometric properties of the adapted questionnaire have not been established in this setting.

Questionnaire data were analyzed descriptively in Microsoft Excel using frequencies, percentages, and mean scores. Following Boone & Boone (2012), mean scores were interpreted in five categories: 1.00–1.80 very low, 1.81–2.60 low, 2.61–3.40 moderate, 3.41–4.20 high, and 4.21–5.00 very high. Interview transcripts were analyzed thematically following the six phases of Braun & Clarke (2006), familiarization, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Excerpts were coded as CD (cognitive dependence), BD (behavioral dependence), or ED (emotional dependence), grouped into sub-themes, and consolidated into four themes. Finally, the two strands were integrated by using the interview findings to explain, elaborate, and, where necessary, complicate the questionnaire results.

RESULTS AND DISCUSSION

Results

In line with the sequential design, the results are presented in two parts: the quantitative findings from the questionnaire, followed by the qualitative findings from the interviews, and then their integration.

a. Quantitative Findings

1. Levels of Dependence by Dimension

Table 1 summarizes the responses to the 12 questionnaire items. Overall, students' dependence on AI in academic writing ranges from moderate to high. It is strongest in the cognitive dimension, which obtained a mean of 3.41 (high). The behavioral and emotional dimensions obtained means of 3.04 and 3.21 respectively, both in the moderate category.

Table 1. Questionnaire Results by Item and Dimension (n = 14)

Item	Statement	A + SA	Mean	Category
Cognitive dependence			**3.41**	**High**
CD-P1	Difficulty generating ideas without AI tools	57%	3.43	High
CD-P2	Relying on AI to construct and organize arguments	57%	3.64	High
CD-P3	Critical thinking ability has decreased since regular AI use	50%	3.36	Moderate
CD-P4	Preferring to let AI process and organize information	43%	3.21	Moderate
Behavioral dependence			**3.04**	**Moderate**
BD-P1	Using AI every time for academic writing assignments	57%	3.64	High
BD-P2	Automatically opening AI at every writing stage	43%	3.43	High
BD-P3	Using AI-generated text directly without critical evaluation	29%	2.57	Low
BD-P4	Using AI even for simple tasks one could do independently	29%	2.50	Low
Emotional dependence			**3.21**	**Moderate**
ED-P1	Anxiety when writing without AI assistance	43%	3.07	Moderate
ED-P2	Less confidence when unable to use AI	50%	3.29	Moderate
ED-P3	Frustration or stress when AI is unavailable	57%	3.29	Moderate
ED-P4	Discomfort submitting work completed entirely without AI	57%	3.21	Moderate

Note. A + SA = percentage of respondents who answered Agree or Strongly Agree. Shaded rows give the dimension mean; categories follow Boone & Boone (2012).

Cognitive dependence. More than half of the students agreed or strongly agreed that they find it difficult to generate ideas without AI (57%, M = 3.43) and that they rely on AI to construct and organize arguments (57%, M = 3.64). Half (50%) agreed that their ability to think critically had decreased since they began using AI regularly (M = 3.36), and 43% preferred to let AI process and organize information for them (M = 3.21).

Behavioral dependence. The behavioral dimension shows a bimodal pattern. Routine and automatic use was high: 57% agreed that they use AI every time they work on an assignment (M = 3.64) and 43% that they open AI automatically at every writing stage (M = 3.43). In contrast, direct, uncritical

use of AI output (M = 2.57) and use of AI for simple tasks (M = 2.50) were low, with only 29% agreeing with each statement. Students therefore appear to use AI as a constant writing companion while still evaluating its output to some degree.

Emotional dependence. Emotional dependence was moderate but meaningful. Anxiety when writing without AI was reported by 43% of students (M = 3.07), reduced confidence by 50% (M = 3.29), frustration or stress when AI is unavailable by 57% (M = 3.29), and discomfort about submitting work completed entirely without AI by 57% (M = 3.21).

2. Overall Distribution of Dependence Levels

Table 2 shows the distribution of students by overall level of dependence. The moderate category was most common (42.9%), followed by very high (21.4%), low (21.4%), and high (14.3%). In total, 78.6% of respondents fell in the moderate to very high categories, and no respondent was in the very low category, meaning that every student showed at least a low level of dependence.

Table 2. Overall Distribution of AI Dependence Levels (n = 14)

Level of dependence	Respondents	Percentage
Very high	3	21.4%
High	2	14.3%
Moderate	6	42.9%
Low	3	21.4%
Very low	0	0.0%

b. Qualitative Findings

Three fourth-semester students, all female, were interviewed. Their profiles differed (Table 3): R08 rated her dependence at 8 out of 10 and used ChatGPT and Gemini mainly for idea generation, with DeepL for translation; R010 rated herself 10 out of 10 and relied on ChatGPT, Gemini, and Claude for revision and content development; and R03 rated her use at 8–9 out of 10 in the drafting stage and used ChatGPT, Perplexity, and Claude for different purposes. Thematic analysis produced four themes.

Table 3. Interview Participants' AI Usage Profiles

Participant	Primary AI tools	Self-rated dependence	Most-used stage
R08	ChatGPT, Gemini, DeepL	8/10	Idea generation
R010	ChatGPT, Gemini, Claude	10/10	Revision and development
R03	ChatGPT, Perplexity, Claude	8–9/10	Drafting

1) Theme 1: AI as a Primary Cognitive Resource

All three participants relied on AI as their first-resort resource when starting academic writing, although the nature of that reliance differed. R08 used AI mainly to retrieve ideas:

> *"It's more about the ideas, more about coming up with ideas. Especially with ChatGPT, Gemini can instantly generate the language we want."* (R08)

R010 relied on AI for the structure of her texts and considered writing without it ineffective:

> *"I always utilize the technological aspect specifically, the structure or framework of the writing… I don't think it's effective to write without using AI."* (R010)

R03 assigned different tools to different needs (ChatGPT for routine tasks, Perplexity for verifiable references, and Claude for more critical language development), which indicates relatively higher AI literacy. Even so, she stated that she could not organize her words or direct her argument without AI:

> *"Without that, how would you arrange the words and the structure? How would you determine the direction without AI? Yeah, it would be really difficult."* (R03)

Taken together, the participants show a spectrum of cognitive reliance: R08 on AI for conceptual ideation, R010 for structural generation, and R03 for linguistic scaffolding. This corroborates the high cognitive mean in the questionnaire.

2) Theme 2: Habitual and Multi-Stage AI Use

All three participants used AI across several stages of the writing process. R08 described a pervasive pattern of switching between AI and translation tools:

> *"It's a bit of AI here, a bit of translation there. Open ChatGPT, open DeepL. It goes on like that."* (R08)

R010 concentrated her use on revision and content development and justified it by efficiency:

> *"I rely on it heavily because it allows me to complete tasks faster."* (R010)

R03 used AI most intensively in drafting, which she rated 8 to 9 out of 10 in frequency, and called AI "crucial." None of the participants reported copying AI output wholesale, which is consistent with the low scores on BD-P3 and BD-P4, but the degree of critical evaluation differed. R08 described minimal, directive prompts ("please make this…"), a pattern associated with passive rather than critical interaction.

3) Theme 3: Anxiety, Frustration, and Divergent Confidence

R08 and R010 described clear distress when AI was unavailable. R08's anxiety was sharpest during examinations, when phones are not allowed:

> *"You can't use your phone during midterms or finals, you know. Oh no, I can't access ChatGPT what am I going to do?"* (R08)

R010 repeatedly used the word "panic":

> *"I would panic, panic intensely because I rely on AI."* (R010)

R03 also reported stress when AI could not be used ("If we couldn't use it, we wouldn't know how to get the assignment done") but expressed a different feeling about submitting AI-assisted work:

> *"I am confident, because I am certain the results are valid and can be substantiated."* (R03)

She grounded this confidence in her practice of choosing which AI recommendations to adopt: "I am the one who ultimately chooses which ones to adopt." Emotional dependence was thus present in all three participants but was less acute in R03, and it was considerably more intense in high-stakes situations than the moderate questionnaire mean suggests.

4) Theme 4: Metacognitive Awareness and Authenticity

The participants were aware of their dependence, but they dealt with questions of authenticity in different ways. R08 acknowledged that her independent ability was stagnating or declining and doubted the authenticity of her texts:

> *"It's common for my writing not to be entirely my own… It doesn't feel human."* (R08)

R010 linked her awareness to a sense of inadequacy:

> *"Yes, I have, because I felt insecure about relying too much on AI-generated answers instead of my own."* (R010)

R03, by contrast, felt a strong sense of ownership of her writing:

> *"No, it is always reflected because the idea and the thinking come from me; the AI simply develops it further."* (R03)

Thus, R08 and R010 showed patterns consistent with passive, automatic dependence, whereas R03 showed more strategic, bounded use. Awareness of dependence was present in all three cases, but it was more fully developed in R03.

c. Integration of Quantitative and Qualitative Findings

The two strands are mutually reinforcing. The high cognitive mean (3.41) is substantiated by interviews in which AI served as the primary resource for ideation, structure, and language. The moderate behavioral mean (3.04) conceals variation that the interviews clarify: habitual use was high for all three participants, but critical evaluation of output differed. The moderate emotional mean (3.21) is contextualized by interviews showing that anxiety escalates sharply in examinations and connectivity failures.

One divergence deserves attention. R03's individual questionnaire score placed her in a comparatively lower dependence category, yet her interview and her self-rated 8–9 out of 10 use in drafting revealed substantial reliance on AI. Two explanations are plausible. First, the items on direct copying and use for simple tasks are items on which she would score low because she evaluates and selects AI output, which lowered her aggregate behavioral score despite frequent use. Second, the interview asked about the drafting stage specifically, whereas the questionnaire asked about academic writing in general. Rather than treating this as an inconsistency, the study treats it as a finding: a student can show low generalized dependence and high task-specific cognitive dependence at the same time.

Overall, two profiles emerge within the broader moderate-to-high pattern. The first (R08 and R010) is characterized by passive cognitive reliance, automatic use, acute distress when AI is unavailable, and concern about authenticity. The second (R03) is characterized by deliberate scaffolding, evaluative engagement, moderate emotional reliance, and a sustained sense of intellectual ownership.

The most striking finding is the high level of cognitive dependence (M = 3.41), and the interviews show what lies behind it: AI has become students' first-resort resource for starting and shaping a text. R08 used AI for idea retrieval, R010 for structural frameworks, and R03 for linguistic scaffolding. This is consistent with the concept of cognitive offloading, in which the habitual delegation of thinking to AI gradually erodes independent reasoning (Gerlich, 2025), and with evidence that higher AI dependence is associated with lower critical thinking (Tian & Zhang, 2025). In MDT terms, AI fulfils students' understanding goals by helping them comprehend and construct content and, in R03's case, orientation goals by helping her structure and direct her writing (Ball-Rokeach & DeFleur, 1976). That half of the respondents agreed that their critical thinking had decreased, and R08's description of herself as "too lazy to think," echo warnings about cognitive atrophy from excessive AI use (Rohilla, 2025).

Discussion

Behavioral dependence showed a distinctive pattern: routine, automatic use was high, whereas direct copying and use for simple tasks were low. This suggests that students treat AI as an ever-present companion yet still evaluate its output, which is a positive sign of AI literacy. However, the interviews show that the depth of evaluation varies, and even "evaluated" use may remain vulnerable to over-reliance if the evaluation is not critical enough (Yin et al., 2026). R010's efficiency-driven justification,

using AI in order to finish faster, illustrates how the immediate gratification of AI-generated text reinforces habit (Deep & Chen, 2025), so that consulting AI becomes an automatic response rather than a deliberate choice.

Emotional dependence was moderate in the questionnaire but considerably more acute in the interviews, especially in high-stakes situations such as examinations and connectivity failures. The anxiety students described when AI was unavailable resembles what Özbay (2025) characterizes as a new, technology-conditioned form of writing anxiety. R08's remark that she can still think for herself, yet feels anxious without ChatGPT, exemplifies the "illusion of competence," in which perceived competence becomes conditional on AI availability (Hardiyanti et al., 2025). From an MDT perspective, AI serves play goals by relieving the stress of academic demands, and when it is absent that stress resurfaces. R010's feeling of insecurity also reflects the paradox described by Alhur et al. (2025) AI reduces short-term anxiety by providing content but can deepen longer-term feelings of inadequacy by replacing the intellectual labor through which confidence is built.

Metacognitive awareness emerged as a pedagogical opening. Even the most dependent participants recognized their dependence, yet awareness alone did not change behavior, a gap also noted in the literature (Deep & Chen, 2025). R03, who evaluated and selected AI output, expressed ownership and confidence in her work, suggesting that strategic and bounded use Kong et al., (2024) is associated with a healthier relationship with AI. Interventions that build critical AI literacy, self-regulation, and metacognitive skills are therefore likely to be more sustainable than prohibition (Teng, 2025). R03's case also shows that a student can score low on generalized dependence items, particularly those about copying and unnecessary use, while still relying heavily on AI for structuring and drafting. Frequency of use and criticality of use should thus be examined separately, which is something self-report questionnaires alone cannot do.

Islamic educational values add an ethical layer to these findings. When students cannot begin writing without AI, the cognitive preconditions for *tadabbur* and *ijtihad* are at risk, and submitting work that does not genuinely reflect one's own understanding strains *amanah*. The tension between these values and the practical convenience of AI can create cognitive dissonance (Seran et al., 2025). The panic reported by R08 and R010 also raises concern about the psychological basis of confident, self-reliant learning. At the same time, the data show that AI can function as a *wasīlah*: when students retain evaluative authority over its output, as R03 did, AI supports rather than replaces intellectual effort. The context therefore calls for differentiated, student-centered responses rather than one-size-fits-all policies.

Several limitations should be acknowledged. The population was small (n = 14), entirely female, and drawn from one department at one university; only three students were interviewed, and they were selected by consent rather than through a full maximum-variation procedure; and the questionnaire was adapted without formal validation or reliability testing. The findings are therefore not statistically generalizable and should be read as an in-depth portrait of one context. Future research should validate the instrument, include larger and more diverse samples, and examine how dependence changes over time.

CONCLUSION

This study examined the level of dependence on AI technology among fourth-semester English Education students at UIM in completing academic writing assignments. Regarding the first research question, students show a substantial level of dependence: 78.6% fell in the moderate to very high categories, with cognitive dependence highest (M = 3.41), followed by emotional (M = 3.21) and behavioral dependence (M = 3.04). Students perceive AI differently, however. R08 and R010 regard it as nearly indispensable for writing and feel anxious without it, whereas R03 regards it as a tool for developing ideas that remain her own.

Regarding the second research question, the interviews show that AI has become the main resource for idea generation, structuring, and language development; that its use is routine across writing stages; and that emotional dependence is contextual, stable in routine tasks but intensifying under pressure, such as examinations. The three dimensions are interconnected, and students' awareness of intellectual stagnation and of doubts about the authenticity of their work offers a basis for more reflective and balanced AI use.

Three practical implications follow. Students should begin with their own ideas and use AI for refinement, expansion, or language checking, limit it to specific stages such as revising and editing, and practice writing independently from time to time. Lecturers can require an initial draft written without AI, set clear stages in which AI may and may not be used, and provide constructive feedback that builds writing confidence. Institutions can develop practical AI-use guidelines aligned with *amanah*, *tadabbur*, and *ijtihad*, and provide AI-literacy training and writing workshops that strengthen independent thinking. In this way, AI can remain a supportive means rather than a substitute for genuine intellectual effort.

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