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# DIGITAL COMPETENCE AND STRATEGIC AI TOOL SELECTION IN HIGHER EDUCATION: EVIDENCE FROM INDONESIAN UNIVERSITY STUDENTS

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**Abstract:** *The increasing integration of artificial intelligence (AI) tools into higher education has transformed students' academic learning practices. This study aims to examine students' AI tool usage patterns, preferences, academic purposes, selection strategies, and perceptions of institutional support and training needs. A cross-sectional survey was conducted among 231 purposively selected students from the Faculty of Tarbiyah and Teacher Training at Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta, Indonesia, using a structured online Google Forms questionnaire administered from 4 to 10 October 2026 comprising closed-ended items and open-ended questions. Data were analysed using descriptive statistics, including frequencies, percentages, means, and standard deviations, while open-ended responses were examined through keyword-based thematic analysis. The findings revealed that ChatGPT was the most widely used AI tool (90.5%), followed by Google Gemini (72.3%) and Google Translate (52.4%). Most respondents (67.1%) used two or three AI tools for academic purposes. AI was primarily used for searching academic information (M = 3.49), generating examples and explanations (M = 3.44), and summarising learning materials (M = 3.41), while its use for research, data analysis, and programming was comparatively limited. Students reported moderate levels of AI tool-selection strategies (M = 3.50) and perceived institutional support (M = 3.38). However, the perceived need for AI training and institutional policies was relatively higher (M = 3.65), particularly regarding ethical AI use, verification of AI-generated information, and acknowledgement of AI assistance in academic work. Furthermore, only 36.8% of respondents had received formal AI training. The findings highlight the importance*

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*of strengthening institutional AI literacy initiatives, providing clear academic guidelines, and promoting responsible and purposeful AI use in higher education.*

**Keywords:** *Artificial Intelligence, AI Tool Usage, Student Preferences, AI Tool Selection, Institutional Support, AI Literacy, Higher Education.*

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## Introduction

Artificial intelligence (AI) has become an increasingly influential component of higher education and shown significant use of artificial intelligence (AI) tools in teaching and learning activities, such as chatbots (Mageira et al., 2022). AI-powered applications support various academic tasks such as interactive and personalized learning experiences (Du & Daniel, 2024), practising language skills in real-time, personalized, and interactive environments (Huang et al., 2022; Al-Moghrabi & Al-Ghonmein, 2024), developing vocabulary and conversational fluency (Kim et al., 2019; Petrović & Jovanović, 2021; Zhang & Huang, 2024). While these technologies offer opportunities for personalised and self-directed learning, they also raise concerns regarding accuracy, reliability, ethical implications, and academic integrity. Understanding students' AI engagement therefore requires examining their academic purposes and the strategies guiding their selection of AI applications.

Various studies have highlighted both the benefits and challenges of AI adoption in higher education. For instance, Chan and Hu (2023) identified students' positive perceptions of generative AI alongside concerns about information accuracy, ethical considerations, and excessive dependence. The emerging of various AI tools also offer students the multiple selection in the higher education ecosystem. The expanding AI ecosystem further complicates students' tool-selection decisions. General-purpose applications such as ChatGPT, Gemini, Microsoft Copilot, Claude, DeepSeek, and Perplexity provide conversational and information-related assistance, while specialised tools such as Grammarly, QuillBot, SciSpace, Elicit, and Google Translate support writing, language refinement, research, and translation. As such, Wang et al. (2023) emphasize the importance of higher education institutions actively shaping the scope and application of AI to support international students' learning needs. In addition, Zainuddin et al. (2024), the findings underscore the critical need for educators and policymakers to establish comprehensive guidelines for the ethical and responsible use of AI in language education. This is because the students may select different applications based on task requirements, perceived usefulness, accessibility, familiarity, and output reliability.

Consequently, investigating AI tool-selection strategies alongside academic purposes offers a more comprehensive understanding of students' AI-related practices. AI literacy represents another important consideration. Ng et al. (2021) conceptualised AI literacy as encompassing the abilities to understand, apply, evaluate, and create with AI while recognising ethical implications. Institutional support also plays a significant role in AI integration highlighted by Chan (2023) who emphasised the importance of providing coordinated pedagogical, governance, and operational approaches to institutional AI policies. Similarly, Miao and Holmes (2023) advocated human-centred AI integration that prioritises ethical responsibility, privacy, equity, and educational suitability. These perspectives highlight the need for universities to provide clear guidance, relevant training, and supportive educational environments.

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Despite growing research on AI adoption, limited Indonesia-specific evidence describes students' academic purposes, AI tool-selection practices, and perceptions of institutional support within the same study. Accordingly, this descriptive study examines Purposes of AI Use (PAU), Institutional AI Training and Support (AITS), and AI Tool-Selection Strategies (ATP) without testing causal, predictive, or mediating relationships. By integrating these three dimensions, the study contributes empirical evidence to understanding students' AI engagement and offers practical implications for AI literacy initiatives, institutional policies, and responsible AI integration in higher education for Indonesia specifically and developing countries in general.

## Literature Review

The rapid advancement of artificial intelligence (AI) has transformed higher education in Malaysia and across Southeast Asia, expanding opportunities for academic writing, information retrieval, language learning, and research-related activities. However, effective AI integration requires more than technological accessibility; it also involves students' academic purposes, technological competencies, and ability to evaluate AI-generated information critically. Malaysian studies highlight both the benefits and challenges of AI adoption. Singh et al. (2024), studying 360 students at Universiti Teknologi MARA (UiTM) Sarawak, reported positive perceptions of ChatGPT for academic assistance alongside concerns about accuracy and academic integrity. Similarly, Mizan and Norman (2024) found that students' perceptions of generative AI were shaped by its perceived benefits and limitations. Tan et al. (2024), using PLS-SEM with 388 Malaysian university students, identified relationships among facilitating conditions, technological characteristics, satisfaction, and continued intention to use ChatGPT. In Indonesia, Margono et al. (2024) reported academic benefits and integrity concerns associated with ChatGPT, while Sari et al. (2025) identified gaps in university students' AI literacy. At the regional level, Mardiana (2026) reported significant relationships between institutional support and digital literacy and competence among respondents from Indonesia, Malaysia, and the Philippines. Collectively, these findings highlight the importance of examining AI engagement beyond general adoption and technological acceptance. However, findings from Malaysia may not fully reflect Indonesian institutional contexts, and descriptive evidence combining these three aspects of AI engagement among Indonesian students remains limited.

### Purposes of AI Use

Purposes of AI Use (PAU) refer to the academic activities for which students employ AI applications, including conceptual clarification, idea generation, academic writing, translation, information summarisation, and research assistance. Unlike general AI adoption measures, PAU emphasises the specific educational objectives underlying students' technological engagement. In a Malaysian research conducted by Singh et al. (2024), the study indicated that students recognise AI applications as useful academic resources. Singh et al. (2024) highlighted students' perceptions of ChatGPT as beneficial for assignments and learning assistance, while Mizan and Norman (2024) identified the importance of perceived benefits and challenges in students' evaluations of generative AI. These findings suggest that academic purposes provide a relevant basis for understanding students' engagement with different AI applications. Consequently, students may consider functionality, accessibility, familiarity, and output reliability when selecting AI tools. Tan et al. (2024) further demonstrated the relevance of facilitating conditions and technological quality to students' continued AI use, although their study did not directly examine academic purposes. A systematic review of 22 studies also identified AI applications for postgraduate academic writing, literature reviews, data analysis,

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and research productivity (Noor, Isa, Sahrir, & Ghalib, 2026). The present study describes these academic purposes rather than testing them as predictors of AI tool selection.

### Institutional AI Training and Support

Institutional AI Training and Support (AITS) encompasses institutional guidance, educational resources, AI-related policies, and training opportunities supporting responsible academic AI use. Higher education institutions play a vital role in developing students' technological competencies while promoting academic integrity, ethical responsibility, and appropriate AI integration. Mardiana (2026) identified positive relationships between institutional support and digital literacy and competence across Indonesia, Malaysia, and the Philippines. Similarly, Teoh and Tan (2026) emphasised institutional capacity, governance alignment, and accountability in Malaysian higher education within the ASEAN AI governance context. Universiti Malaya's introduction of AI-related academic policies and ethical guidelines in 2026 further illustrates the increasing institutional emphasis on responsible AI integration. Nevertheless, existing institutional support and students' expectations for additional training represent conceptually different dimensions. Existing support reflects perceived institutional provision, whereas training and policy needs indicate desired improvements. An expert-validated AI framework likewise identifies ethical and responsible AI use as an important component of postgraduate research support (Noor, Isa, Sahrir, Ghalib, & Aziz, 2026). These two aspects are therefore reported separately in the present descriptive analysis.

### AI Tool-Selection Strategies

AI Tool-Selection Strategies (ATP) refer to students' reported considerations and decision-making practices when choosing AI applications for academic tasks. Given the diversity of available technologies, students may evaluate applications according to their functionality, perceived usefulness, accessibility, familiarity, output reliability, and suitability for specific educational purposes. Malaysian research highlights the relevance of technological characteristics in students' AI engagement. Tan et al. (2024) identified significant relationships between system quality, information quality, service quality, conversational quality, and user satisfaction with ChatGPT. Similarly, Singh et al. (2024) reported that students recognised AI's academic benefits while remaining concerned about generated information accuracy. Although these findings concern AI perceptions and satisfaction rather than comparative tool selection, they identify considerations potentially relevant to students' technological decisions. At the regional level, Mardiana (2026) demonstrated the relationship between institutional support and digital competence. Such findings suggest that institutional environments may be relevant to informed technological engagement, although digital competence and AI tool-selection strategies remain conceptually distinct. The seven tool-selection items describe reported practices, not independently tested decision-making competence.

### Research Questions

This study addresses the following research questions:

**RQ1:** What are the patterns of AI tool usage and preferences among university students?

**RQ2:** For what academic purposes do university students use AI tools, and how frequently are these tools used?

**RQ3:** What strategies do university students employ when selecting and using different AI tools for academic tasks?

**RQ4:** How do university students perceive existing institutional AI support, and what are their training and policy needs?

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## Methodology

This study employed a descriptive, cross-sectional survey design to examine students' AI tool usage patterns, preferences, academic purposes, selection strategies, and perceptions of institutional support and training needs. Data were collected from 231 undergraduate and postgraduate students at Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta, Indonesia, through a structured online Google Forms questionnaire administered from 4 to 10 October 2026 to students of the Faculty of Tarbiyah and Teacher Training. The study adopted a purposive sampling, a non-probability approach targeting students from the Faculty of Tarbiyah and Teacher Training, and participation was voluntary. The participants have completed the online Google Form after providing informed consent.

Data were analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations, to summarize respondents' characteristics, AI usage patterns, and perceptions. Mean scores were interpreted using three levels: low (1.00–2.33), moderate (2.34–3.66), and high (3.67–5.00). Open-ended responses were examined through keyword-based thematic analysis to identify recurring themes related to AI use, training needs, and institutional support. Given the non-probability sampling approach and single-institution context, the findings should not be generalized to the broader university student population.

### Research Instrument

The research instrument was adapted by the researchers from existing survey items and a review of relevant literature on AI adoption, AI literacy, student perceptions, and institutional support in higher education (Chan, 2023; Chan & Hu, 2023; Ng et al., 2021). The structured questionnaire comprised five sections covering respondents' demographic profiles, AI tool usage and preferences, academic purposes of AI use, institutional training and support, and AI tool-selection strategies. The demographic section collected information on gender, level of study, academic programme, previous formal AI training, and self-reported digital competence. The AI tool usage section examined tools previously used, frequently used tools, preferred tools, and the number of AI tools used for academic purposes. The remaining sections comprised 41 Likert-scale items: 24 items (C01–C24) measuring academic purposes of AI use, 10 items (D01–D10) examining existing institutional support and perceived training and policy needs, and seven items (E01–E07) assessing AI tool-selection strategies. The complete questionnaire should be provided as Supplementary File S1 to document the adapted item wording and response scales.

### Reliability and Validity

The quantitative instrument used a five-point frequency scale ranging from 1 (Never) to 5 (Very Often), while the institutional support and tool-selection sections employed a five-point agreement scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). An additional open-ended question allowed respondents to provide suggestions and express concerns regarding AI use in higher education. The instrument was reviewed for content relevance by an expert in IT and education. As the questionnaire was adapted from existing instruments, no separate pilot study was conducted. Instead, internal consistency was assessed using data collected from the main study (n = 231). The Cronbach's alpha coefficients were .953 for academic purposes of AI use, .782 for current institutional support, .951 for training and policy needs, and .917 for AI tool-selection strategies, indicating acceptable to excellent internal consistency across the four dimensions. However, these coefficients indicate internal consistency rather than establishing construct validity, as Cronbach's alpha alone is insufficient to confirm the validity of an instrument (Tavakol & Dennick, 2011; Boateng et al., 2018).

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## Results and Findings

The following results and findings are presented according to RQ1–RQ4 via descriptive statistics only as the follow:

### Respondents' Demographic Profile

A total of 231 students from Universitas Islam Negeri (UIN) Syarif Hidayatullah Jakarta participated in the study. As presented in Table 1, most respondents were female (88.3%), while 11.7% were male. The majority were undergraduate students (88.3%), followed by master's students (11.3%) and doctoral students (0.4%). Most respondents were enrolled in Education-related programmes (90.9%). Regarding digital competence, 71.4% assessed their competence as moderate, while 18.6% reported high or very high competence. Only 36.8% had received formal AI training, whereas 51.5% had not received such training.

**Table 1. Demographic Profile of Respondents (n = 231)**

| Characteristics | Frequency | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Female | 204 | 88.3 |
| Male | 27 | 11.7 |
| **Level of Study** | | |
| Undergraduate | 204 | 88.3 |
| Master's | 26 | 11.3 |
| Doctoral | 1 | 0.4 |
| **Self-Reported Digital Competence** | | |
| Very low | 2 | 0.9 |
| Low | 21 | 9.1 |
| Moderate | 165 | 71.4 |
| High | 34 | 14.7 |
| Very high | 9 | 3.9 |
| **Previous Formal AI Training** | | |
| Yes | 85 | 36.8 |
| No | 119 | 51.5 |
| Unsure | 27 | 11.7 |

### Research Question 1: AI Tool Usage Patterns and Preferences

Table 2 presents students' AI tool usage patterns and preferences. ChatGPT was the most widely used tool, with 90.5% of respondents reporting previous use. It was also the most frequently used (48.5%) and most preferred tool (42.4%). Google Gemini ranked second in previous use (72.3%), followed by Google Translate (52.4%) and Claude (38.1%). Interestingly, Claude was preferred by 16.5% of respondents despite having a lower overall usage rate than Google Translate. This suggests that familiarity with an AI tool does not necessarily correspond to its level of preference. Furthermore, 67.1% of respondents reported using two or three AI tools for academic purposes, indicating that multiple-tool usage was common.

**Table 2. AI Tool Usage and Preferences (n = 231)**

| AI Tools | Ever Used (%) | Most Frequently Used (%) | Most Preferred (%) |
|---|---|---|---|
| ChatGPT | 90.5 | 48.5 | 42.4 |
| Google Gemini | 72.3 | 21.6 | 22.1 |

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| | | | |
|---|---|---|---|
| Google Translate | 52.4 | 7.8 | 5.6 |
| Claude | 38.1 | 12.6 | 16.5 |
| NotebookLM | 17.7 | 2.6 | 3.0 |
| Microsoft Copilot | 13.9 | 1.3 | 2.2 |
| Perplexity | 11.7 | 0.9 | 1.3 |
| AI Image Generation Tools | 8.2 | 0.0 | 0.0 |

Note: Percentages are based on 231 respondents. Multiple responses were permitted for tools previously used.

**Research Question 2: Academic Purposes of AI Use**

Table 3 presents the academic purposes for which students used AI tools. Overall, AI use across the 24 academic purposes was moderate (M = 3.24, SD = 0.64). The highest-ranked purposes were searching for academic information (M = 3.49), generating examples and explanations (M = 3.44), and summarising articles or learning materials (M = 3.41). Other common purposes included preparing presentations (M = 3.40), understanding difficult concepts (M = 3.39), and translation (M = 3.38). In contrast, AI was less frequently used for conducting research (M = 2.97), analysing data (M = 2.95), and coding or programming (M = 2.58). These findings indicate that students primarily used AI to support information retrieval, content comprehension, and routine academic tasks rather than more specialised research and technical activities.

**Table 3. Academic Purposes of AI Use (n = 231)**

| Academic Purposes | Mean | SD | Level |
|---|---|---|---|
| Searching for academic information | 3.49 | 0.93 | Moderate |
| Generating examples and explanations | 3.44 | 0.91 | Moderate |
| Summarising articles and learning materials | 3.41 | 0.91 | Moderate |
| Preparing presentations | 3.40 | 0.91 | Moderate |
| Understanding difficult concepts | 3.39 | 0.93 | Moderate |
| Translation | 3.38 | 0.99 | Moderate |
| Independent learning | 3.38 | 0.89 | Moderate |
| Preparing for examinations | 3.37 | 0.90 | Moderate |
| Generating assignment or project ideas | 3.36 | 0.88 | Moderate |
| Completing assignments | 3.36 | 0.89 | Moderate |
| Solving academic problems | 3.31 | 0.91 | Moderate |
| Generating learning materials | 3.29 | 0.85 | Moderate |
| Brainstorming | 3.24 | 0.96 | Moderate |
| Paraphrasing or rewriting texts | 3.24 | 0.82 | Moderate |
| Checking references and citations | 3.24 | 0.98 | Moderate |
| Developing research questions and objectives | 3.20 | 0.92 | Moderate |
| Improving grammar and language | 3.19 | 0.93 | Moderate |
| Searching for research literature | 3.19 | 0.89 | Moderate |
| Reviewing academic articles | 3.14 | 0.93 | Moderate |
| Academic writing | 3.13 | 0.88 | Moderate |
| Obtaining feedback on academic work | 3.08 | 0.90 | Moderate |
| Conducting research | 2.97 | 0.97 | Moderate |
| Analysing data | 2.95 | 1.02 | Moderate |
| Coding and programming | 2.58 | 1.03 | Moderate |
| **Overall** | **3.24** | **0.64** | **Moderate** |

Note. Mean scores were interpreted using three levels: Low = 1.00–2.33; Moderate = 2.34–3.66; and High = 3.67–5.00, based on equal-interval classification (see Pimentel, 2010).

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**Research Question 3: AI Tool-Selection Strategies**

Table 4 presents students' strategies for selecting and using AI tools. The overall mean score was 3.50 (SD = 0.67), indicating a moderate level of strategic AI tool selection. The highest-rated strategy was switching to another AI tool when the initial tool produced unsatisfactory results (M = 3.59), followed by comparing responses from different AI tools (M = 3.56) and using multiple AI tools for the same task (M = 3.52). The lowest-rated strategy was using different AI tools for different academic purposes (M = 3.40). These findings suggest that students were relatively more inclined to switch between tools based on response satisfaction than to select tools systematically according to specific academic requirements.

**Table 4: AI Tool-Selection Strategies (n = 231)**

| AI Tool-Selection Strategies | Mean | SD | Level |
|---|---|---|---|
| Switching tools when results are unsatisfactory | 3.59 | 0.88 | Moderate |
| Comparing responses from different AI tools | 3.56 | 0.86 | Moderate |
| Using multiple tools for the same task | 3.52 | 0.78 | Moderate |
| Selecting tools according to academic tasks | 3.49 | 0.81 | Moderate |
| Selecting tools based on their strengths and features | 3.48 | 0.82 | Moderate |
| Combining outputs from different AI tools | 3.45 | 0.80 | Moderate |
| Using different tools for different academic purposes | 3.40 | 0.81 | Moderate |
| **Overall** | **3.50** | **0.67** | **Moderate** |

**Research Question 4: Institutional AI Support and Training Needs**

Table 5 presents students' perceptions of current institutional AI support and their training and policy needs. Current institutional support recorded an overall mean of 3.38 (SD = 0.62), indicating a moderate level. Among the three items assessing current support, lecturers' instructions regarding acceptable AI use in assignments received the highest mean (M = 3.47), followed by students' understanding of university AI policies (M = 3.37). The lowest mean was recorded for the adequacy of university guidance on appropriate AI use (M = 3.30). The perceived need for training and policies recorded a higher overall mean (M = 3.65, SD = 0.77). The highest-rated needs were training on ethical and responsible AI use (M = 3.74), verification of AI-generated information (M = 3.73), acknowledgement of AI use in academic work (M = 3.68), and effective prompt writing (M = 3.67). These findings indicate that students perceived a greater need for structured AI literacy training and clearer institutional guidance than the level of support they currently reported receiving.

**Table 5: Institutional AI Support and Training Needs (n = 231)**

| Items | Mean | SD | Level |
|---|---|---|---|
| **A. Current Institutional Support** | | | |
| University provides sufficient guidance on AI use | 3.30 | 0.72 | Moderate |
| Understanding of university AI policies | 3.37 | 0.76 | Moderate |
| Lecturers provide clear instructions on AI use | 3.47 | 0.75 | Moderate |
| **Overall Current Support** | **3.38** | **0.62** | **Moderate** |
| **B. Training and Policy Needs** | | | |
| Formal AI literacy training | 3.61 | 0.87 | Moderate |
| Training on effective prompt writing | 3.67 | 0.88 | High |
| Training on verifying AI-generated information | 3.73 | 0.90 | High |
| Training on ethical and responsible AI use | 3.74 | 0.91 | High |

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| | | | |
|---|---|---|---|
| Guidance on acknowledging AI use | 3.68 | 0.85 | High |
| Clear university policies on generative AI | 3.60 | 0.86 | Moderate |
| Integrating AI literacy into teaching and learning | 3.53 | 0.84 | Moderate |
| **Overall Training and Policy Needs** | **3.65** | **0.77** | **Moderate** |

**Findings from Open-Ended Responses**

Of the 231 respondents, 123 provided meaningful open-ended comments. Keyword-based thematic analysis identified six recurring themes, as presented in Table 6. The most frequently identified theme was the need for regular AI training, workshops, and seminars (52.0%), followed by ethical and responsible AI use (43.1%). Respondents also emphasised the importance of clear institutional policies (21.1%) and verification of AI-generated information (16.3%). Other concerns included excessive dependence on AI and the importance of maintaining critical thinking (13.8%), as well as equitable access to premium or subsidised AI tools (13.8%).

**Table 6: Themes Identified from Open-Ended Responses (n = 123)**

| Themes | Frequency | Percentage (%) |
|---|---|---|
| Regular AI training, workshops, and seminars | 64 | 52.0 |
| Ethical and responsible AI use | 53 | 43.1 |
| Clear institutional guidelines and policies | 26 | 21.1 |
| Accuracy and verification of AI-generated information | 20 | 16.3 |
| AI dependency and critical thinking | 17 | 13.8 |
| Free or subsidised access to AI tools | 17 | 13.8 |

Note: Percentages are based on 123 meaningful responses. Individual comments could be coded under more than one theme.

The qualitative findings complement the descriptive results by highlighting students' expectations for more systematic AI training, clearer academic guidelines, and responsible AI integration in higher education.

## Discussion

The findings reveal widespread adoption of AI tools among university students, with ChatGPT emerging as the most frequently used and preferred application. Most respondents used multiple AI tools, primarily for searching academic information, generating explanations, and summarising learning materials. These findings are consistent with Chan and Hu (2023), who highlighted the potential of generative AI to enhance academic learning and efficiency. They also add institution-specific Indonesian evidence on the use of several AI tools, beyond studies focusing on ChatGPT alone (Margono et al., 2024). However, the comparatively limited use of AI for research and data analysis suggests that students have yet to fully explore its advanced academic applications. This differs from the potential for AI-supported research activities identified by Noor, Isa, Sahrir, and Ghalib (2026), although their review focused on postgraduate research rather than the present student population.

Students demonstrated moderate AI tool-selection strategies (M = 3.50), particularly in comparing responses and switching between tools when results were unsatisfactory. Nevertheless, selecting AI tools systematically according to specific academic tasks remained less common. This finding highlights the importance of developing AI literacy beyond basic tool usage, including critical evaluation and informed selection of AI applications (Ng et al.,

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2021). Regarding institutional support, students reported moderate satisfaction with existing guidance (M = 3.38), while expressing relatively greater needs for training and policies (M = 3.65). Their priorities included ethical AI use, verification of AI-generated information, effective prompt writing, and acknowledgement of AI assistance. These findings align with Chan (2023), who emphasised the importance of institutional policies and educational frameworks for responsible AI integration. They are also consistent with the emphasis on ethical AI practices in the framework validated by Noor, Isa, Sahrir, Ghalib, and Aziz (2026). The observed patterns are descriptive and do not demonstrate statistical relationships among PAU, AITS, and ATP.

The open-ended responses reinforced these findings, particularly the demand for regular AI training, clearer guidelines, and responsible AI practices. As emphasised by Kasneci et al. (2023), effective AI integration requires critical thinking, human oversight, and appropriate educational support. Therefore, universities should strengthen structured AI literacy programmes and establish clear institutional guidelines to promote purposeful and responsible AI use.

## Conclusion

This study examined AI tool usage patterns, preferences, academic purposes, selection strategies, and institutional support among 231 students at UIN Syarif Hidayatullah Jakarta. The findings revealed widespread AI adoption, particularly ChatGPT, with students primarily using AI for information searching, explanations, and learning support. However, strategic tool selection and more advanced academic applications remained relatively limited.

Students also expressed greater needs for AI training and institutional guidance, particularly in ethical use, information verification, and academic integrity. The study highlights the importance of strengthening AI literacy programmes, promoting strategic AI tool selection, and establishing clear policies for responsible AI integration in higher education. Future studies involving multiple institutions and more diverse student populations are recommended to extend these findings. The purposive, single-institution sample and self-reported measures limit the generalisability of the results.

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## APPENDIX: SUPPLEMENTARY MATERIAL

**Research Questionnaire: Students' Use, Preferences, and Institutional Support for Artificial Intelligence Tools in Higher Education**

**Study Location:** Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia
**Data Collection:** 4–10 October 2026

**Participants:** 231 university students
**Survey Platform:** Google Forms

**Section 1: Consent to Participate**
I have read the information provided about the study and agree to participate in this survey.

**SECTION A: DEMOGRAPHIC AND BACKGROUND INFORMATION**
Please select the answer that best describes you.
A1. Institution
- International Islamic University Malaysia (IIUM), Malaysia
- Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia

A2. Gender
- Male
- Female

A3. Level of Study
- Undergraduate Bachelor (S1)
- Postgraduate Master (S2)
- Postgraduate PhD (S3)

A4. Programme of Study
Please indicate your programme of study.
A5. Have you ever received formal training, workshops, courses, or institutional guidance on the use of AI for learning?
- Yes
- No
- Not sure

A6. How would you rate your general digital competency?
- Very low
- Low
- Moderate
- High
- Very high

**SECTION B: USE OF AI TOOLS**
B1. Which of the following AI tools have you used for academic or learning purposes? Select all that apply.
Tools recorded in the responses included ChatGPT, Google Gemini, Claude, Microsoft Copilot, Perplexity, DeepSeek, NotebookLM, Google Translate, SciSpace, Elicit, AI image-generation tools, AI presentation tools, AI video-generation tools, AI coding/programming assistants, and AI applications integrated into office platforms.
B2. Which AI tool do you use most frequently? Select all that apply.
B3. Which AI tool do you prefer most for academic purposes? Select all that apply.

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If the answer is OTHERS, please mention the name of the AI application and purpose of using it.

B4. How many different AI tools do you normally use for academic work?

- 1
- 2
- 3
- 4
- 5
- More than 5

**SECTION C: PURPOSES OF AI USE (PAU)**

**Instructions:** Indicate how frequently you use AI tools for the following academic activities.
Response scale: 1 = Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Very Often.

C01. Understanding difficult concepts.
C02. Generating ideas for assignments or projects.
C03. Brainstorming.
C04. Academic writing.
C05. Improving grammar and language.
C06. Paraphrasing or rewriting text.
C07. Translation.
C08. Summarising articles or learning materials.
C09. Searching for academic information.
C10. Finding research literature.
C11. Reviewing academic articles.
C12. Developing research questions or objectives.
C13. Preparing assignments.
C14. Preparing presentations.
C15. Generating learning materials.
C16. Solving academic problems.
C17. Preparing for examinations.
C18. Receiving feedback on my work.
C19. Learning independently.
C20. Coding or programming.
C21. Analysing data.
C22. Conducting research.
C23. Checking references or citations.
C24. Generating examples or explanations.

**SECTION D: AI TRAINING AND INSTITUTIONAL SUPPORT (AITS)**

Instructions: Indicate your level of agreement with the following statements.
Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.

D1. Current Institutional Support
D01. My university provides sufficient guidance on appropriate AI use.
D02. I clearly understand my university's policies regarding AI use.
D03. Lecturers provide clear instructions regarding acceptable AI use in assignments.
D2. Training and Policy Needs
D04. Universities should provide formal AI literacy training for students.
D05. Students need training on how to write effective prompts.

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D06. Students need training on how to verify AI-generated information.
D07. Students need training on ethical and responsible AI use.
D08. Students need guidance on how to acknowledge the use of AI in academic work.
D09. Universities should provide clear policies regarding the use of generative AI.
D10. AI literacy should be integrated into university teaching and learning.

**SECTION E: AI TOOL PREFERENCE AND SELECTION STRATEGIES (ATP)**
Instructions: Indicate your level of agreement with the following statements.
Response scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree.
E01. I use different AI tools for different academic purposes.
E02. I choose AI tools according to the type of academic task.
E03. I sometimes use more than one AI tool to complete the same task.
E04. I compare responses generated by different AI tools.
E05. I switch to another AI tool when the first tool does not provide a satisfactory response.
E06. I combine outputs from different AI tools when completing academic tasks.
E07. I select AI tools based on their strengths and features.
SECTION F: OPEN-ENDED QUESTION
Other comments or suggestions to improve the use of AI tools among students in the university.
SCORING AND DATA ANALYSIS PROCEDURES
The questionnaire comprised 41 Likert-scale items divided into four descriptive dimensions:

| Dimension | Items | Number of Items | Scale |
|---|---|---|---|
| Purposes of AI Use (PAU) | C01–C24 | 24 | Frequency |
| Current Institutional Support | D01–D03 | 3 | Agreement |
| Training and Policy Needs | D04–D10 | 7 | Agreement |
| AI Tool-Selection Strategies (ATP) | E01–E07 | 7 | Agreement |
| Total | | 41 | |

Responses were coded from 1 to 5 according to the frequency or agreement scales. Mean scores and standard deviations were calculated for individual items and each dimension.
Mean scores were interpreted using three levels (Pimentel, 2010):

- Low: 1.00–2.33
- Moderate: 2.34–3.66
- High: 3.67–5.00

Higher frequency scores indicated more frequent AI use for the specified academic activities, while higher agreement scores indicated greater endorsement of the corresponding statements.

**Internal Consistency**
Cronbach's alpha was calculated using the 231 responses from the main study. The coefficients were .953 for PAU, .782 for current institutional support, .951 for training and policy needs, and .917 for ATP.

**Content Validation and Pilot Testing**
The adapted questionnaire was reviewed for content relevance by an expert in IT and education. No separate pilot study was conducted. The questionnaire dimensions were treated as descriptive item inventories, and no separate factor-structure, convergent-validity, or discriminant-validity analysis was reported.

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