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Systematic and Haphazard Use of AI Tools among Undergraduates in Nepal

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Abstract

Artificial intelligence (AI) tools are increasingly embedded in undergraduate academic practices that arouse concern related to quality and academic ethical use. This study aims to identify the systematic and haphazard use of AI based on three theoretical framework technology acceptance model (TAM), self-regulated theory (SRL), and academic integrity framework. Quantitative data were collected from 81 undergraduate students at Lord Buddha College, Kathmandu. The structured Likert scale questionnaire was distributed and collected, while analyzing data with descriptive statistical techniques to analyze students' systematic AI usage. Significantly, most students demonstrated systematic AI use aligned with SRL principles, including clear goal setting, strategic tool selection, content verification, and reflective acknowledgement of sources, but there is only high standard deviation (SD) related with systematic use statement. The absence of formal AI literacy training suggests potential vulnerabilities related to academic integrity and over-reliance. The study concludes that there is the wider engagement with AI by undergraduates in systematically and ethically aware manner. Yet, the institutional guidance and structured AI literacy frameworks are essential to sustain responsible use in higher education.

Keywords: artificial intelligence, AI literacy, haphazard use, systematic use

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Introduction

The rapid growth in use of Artificial Intelligence (AI) has a significant impact on various sectors, including healthcare, manufacturing, finance, and most notably, education. The development of large language models (LLMs) i.e. ChatGPT, Microsoft Co-Pilot, and Google Gemini have brought sea change in academic behavior. These advanced tools are noticeably from previous educational technologies that merely support information retrieval and management. What distinguishes these AI tools is their capacity to support higher-order cognitive process including idea generation, text production, problem-solving, and code development. This shift has the profound implications for learning, teaching and academic integrity in higher education (Kasneci et al., 2023; Rahman & Watanobe, 2023).

The widespread accessibility and user-friendly nature of generative AI tools have accelerated their adoption among university students worldwide. Empirical studies consistently report high levels of AI tools usage among undergraduates, particularly for writing assistance, summarization, research support, and programming-related tasks (Gruenhagen et al., 2024; Von Garrel & Mayer, 2023). From a technology adoption perspective, this rapid uptake can be explained by the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are primary determinants of users' willingness to adopt new technologies (Davis, 1987). In academic context, AI tools are perceived as highly useful due to their ability to save time, improve efficiency, and provide instant feedback, thereby reinforcing their integration into students' learning routines. In addition, social influence, and supportive conditions have also played significant role for adopting AI in academic context. These parameters social influence and supportive condition were also suggested by the newer version of TAM named Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

The new technology AI is being adopted in speedy manner. Moreover, the increasing reliance on AI tools has also intensified concerns regarding the quality, depth, and ethics of student learning. While AI has the potential to support learning when used appropriately, uncritical or excessive dependence on AI-generated outputs may undermine critical thinking, creativity, and independent problem-solving skills (Zhai et al., 2024). Scholars have raised alarms about students submitting AI-generated work without adequate verification, reflection, or attribution, leading to risk of plagiarism, misinformation, and fabricated references (Bhattacharyya et al., 2023). These concerns have prompted higher education institutions and international organizations to call for responsible and ethical integration of AI in academic environments (Gallent Torres et al., 2023).

The growing research have suggested to explore on how AI is being used by students beyond the issue of whether AI is being used or not. In this regard, a critical distinction can be drawn between systematic and haphazard use of AI tools. Systematic use refers to deliberate,

goal-oriented, and reflective engagement with AI technologies, where students employ AI as a supportive learning aid while maintaining control over cognitive and ethical decision-making. In contrast, haphazard use is characterized by unplanned, over-reliant, or ethically inattentive practices, such as accepting AI outputs without verification or allowing AI to replace original analysis and reasoning. This binary conceptualization provides analytically productive lens for understanding how students navigate the affordances and limitations of AI technologies in ways that either enhance or compromise their academic development (Cotton et al., 2024; Mollick & Mollick, 2023).

This distinction aligns closely with Self-Regulated Learning Theory (SRL), which emphasizes learners' active role in planning, monitoring, and evaluating their learning processes (Zimmerman, 2000). Within an SRL framework, systematic AI use can be understood as a manifestation of self-regulated learning behavior, wherein students set clear objectives, select appropriate strategies, monitor AI-generated content, and reflect on its relevance and accuracy. Conversely, haphazard AI use reflects weak self-regulation, surface learning approaches, and reduced metacognitive awareness. Prior research has demonstrated that AI tools can enhance learning outcomes when embedded within self-regulated learning strategies but may have detrimental effects when used without reflection or control (Cheng et al., 2022; Kasneci et al., 2023).

Equally important is the ethical dimension of AI use in academia. The Academic Integrity Framework (AIF), which emphasizes principles such as honesty, responsibility, fairness, and accountability, provides a critical lens for evaluating students' engagement with AI tools. The use of AI-generated content raises complex ethical questions related to authorship, citation, transparency, and intellectual responsibility. Studies have shown that while many students express awareness of these issues, their actual practices may be inconsistent, particularly in the absence of formal AI literacy training and institutional guidelines (Perkins et al., 2024; Triyanto & Handayani, 2025).

Despite the growing volume of research on AI in higher education, several gaps remain. First, much of the existing literature focuses on students' perceptions or frequency of AI tool usage, with limited attention to the qualitative nature of their engagement-specifically, whether AI is used systematically or haphazardly. Second, empirical studies from developing-country contexts, including South Asia, remain underrepresented, even though cultural, institutional, and infrastructural factors may significantly influence AI adoption and use (Venkatesh et al., 2003). Third, few studies integrate technology adoption theories with learning and ethical frameworks to provide a holistic understanding of AI use in academic settings. Fourth, the sociocultural and institutional context of developing nations such as Nepal remains largely unexplored, despite the fact that students in these settings may face challenges,

for example, limited digital infrastructure, language barriers in AI tools, and lack of AI use national guidelines for education.

In an attempt to address above mentioned gap, the study aimed to investigate the patterns of AI tool usage among undergraduates' students at a higher education institution in Nepal. Its another specific objective is to trace on systematic and haphazard use of AI. With the theoretical guidance of TAM, SRL and AIF, it sought to move beyond binary debates about AI as it is good or bad. Rather, it explored how AI supports meaningful, ethical, and self-directed learning. The findings informed educators, policymakers, and institutions on the essentiality of AI literacy initiatives and ethical guidelines for higher education (Torres et al., 2023). The study contributed a theory-integrated perspective to the growing discourse on responsible AI adoption in higher education.

Literature Review

Higher education is undergoing significant changes due to the application of artificial intelligence (AI), including ChatGPT, Grammarly, QuillBot, and AI-powered search engines. Undergraduate students' approaches to research, academic writing, problem-solving, and time management have changed as a result of their incorporation into academic life. Potentiality and opportunities from AI are extensive, yet, the effectiveness could be vary based on students' capacity to use it. Use of AI could be systematic and haphazard.

The question of systematic use has been prominent to explore, even for self-evaluation while using AI. That's why writers like Luckin (2018) emphasize the importance of incorporating AI literacy into the curriculum to ensure that students maximise their benefits without compromising academic integrity.

In this situation, consistent use promotes the development of transferable skills, including digital literacy, critical thinking, and self-directed learning, in addition to improved academic outcomes. Though there is plagiarism detection software, the enhanced AI capacity has left behind in detecting plagiarism (Saqib & Zia, 2024). AI is now being rooted in academic practice, hence, learning to use is more crucial and tracing and detecting it's use. To reiterate it's essentiality, the important change to bring into the academic practice is to accept and learn the proper way, i.e. the systematic way.

Unless the systematic process is learned, students could be trapped into haphazard process. Haphazard adoption often prioritizes immediate convenience over long-term learning, leading to shallow engagement with subject matter (Cotton et al., 2024). University students frequently use AI for academic assignments but frequently fail to critically reflect on the ethical implications, which results in over-reliance and diminished critical thinking (Triyanto & Handayani, 2025).

Acceptance and Use of Technology

When the use of AI tools is concerned, the technology acceptance comes under primarily associated. It was exclusively represented by technology acceptance model (TAM) that incorporates perceived usefulness (PU) and perceived ease of use (PEU) criteria. As Davis (1987) hypothesized and proved that the PEU has direct impact upon PU of the system. PU resembles with the features of systematic use within self-regulatory learning (SRL) framework (Winne & Perry, 2000). While PEU of AI tools could lead to haphazard use. In other way, it is claimed PEU of AI tools assisted with systematic use lead toward PU, and PEU of AI tools accompanied with haphazard use could lead to misuse and rupture of academic integrity too.

SRL suggests for 'defining tasks, set goals and planning, apply study tactics and strategies, and lastly adapt learning process for the future. Students depend on their own learning process for exam preparation, and solving their problem. Self-learning process is desirable and suitable in both formal and informal learning following three cyclic processes, namely, goal setting, monitoring, and self-evaluating (Beishuizen & Steffens, 2011). Self-learning is possible for a learner in the free-environment where learner decides what, where, how to learn. Yet, proper feedback on learnings from instructors and teachers after using the digital tools is emphasized (Bartolome & Steffens, 2011). Present days frequently used digital tools are AI. So, it is high time to provide insights on responsible integration of AI technologies into educational curricula.

Comparative perspectives: systematic vs. haphazard use

A comparison between systematic and haphazard use underscores significant differences in learning outcomes. Systematic users demonstrate higher-quality academic outputs, improved comprehension, and stronger engagement with learning materials (Kasneci et al., 2023) .By contrast, haphazard users are more likely to produce superficial work, face difficulties in independent problem-solving, and risk breaching academic integrity standards (Cotton et al., 2024).

Instead of taking the place of students' existing knowledge and abilities, generative artificial intelligence can serve as a virtual assistant that offers assistance at every step of the writing process. To maintain the integrity and uniqueness of their work, students need to be mindful of potential hazards and take preventative measures (Reis et al., 2023) . Systematic use incorporated TAM, SRL, and AIF, while haphazard use ignores all parameters discussed by these frameworks. These frameworks highlighted on the pedagogical shift toward equipping students with self-reflective and ethical competencies to organize AI as a productive knowledge tool (Chan & Hu, 2023).

Methods

The parameters for systematic and haphazard use of AI had been identified from various publications. Then they were represented by the questionnaires of the research.

Table 1

Parameters of Systematic and Haphazard Use of AI

Systematic	Haphazard
Deliberate and planned application	Unplanned, inconsistent, or over-reliant engagement with AI (Cotton et al., 2024)
Have learning goals	Immediate convenience over long-term learning
Self-control	Accept inaccuracy of result (Saihi et al., 2024)
Have digital literacy, critical thinking, and sef-directed learning (Luckin, 2018)	Committing plagiarism
Gone through anti-plagiarism software (Saqib & Zia, 2024)	Improper citation (Farhi et al., 2023)
Skill of reference management and citation system	Over-reliance on AI dialogue systems (Zhai et al., 2024)
Content verification, drafting, revision, and brainstorming (Kasneci et al., 2023)	Produce superficial work (Kasneci et al., 2023)

These parameters were compared with Technology Acceptance Model (TAM), Self-Regulated Learning (SRL) and Academic Integrity Framework (AIF).

This research examines how undergraduate students utilize AI tools in their academic tasks. This study adopted descriptive research design following the convenience sampling method. An online survey instrument was used to collect data through a questionnaire. Among 481 total undergraduate students of one college, the 81 numbers represent 50 % proportion with a 95% confidence level and 10% margin of error using formula of Cochran (1997) for finite population. The questionnaires were delivered via email, social media platforms such as

WhatsApp and LinkedIn, with reference links. The total responses returned are not all 81, they varied in number.

There are altogether 17 questions asked to respondents, in which 2 questions were general inquiry about their AI use and 15 questions were about divided into two categories, namely systematic use and haphazard use. They were asked as follows:

Table 2

List of Questions and their Codes

SN	Questions Statement	Code
1	Have you ever received instructions or training on the ethical use of AI tools?	U1
2	How often do you use AI tools for academic purposes?	U2
3	I have clear objectives in mind while using AI tool.	S1
4	I choose right AI tools for doing an academic task.	S2
5	I always check AI-generated content with reliable sources.	S3
6	I always acknowledge citations and references provided by AI tools in my assignment.	S4
7	I feel that using AI tools enhances my learning skills.	S5
8	I am concerned that the misuse of AI tools will lead to issues of plagiarism.	S6
9	I use AI tools systematically in academic tasks.	S7
10	I use AI tools without understanding or following ethical guidelines.	H1
11	I rely solely on AI-generated responses without verifying them.	H2
12	I trust references provided by AI without first confirming their authenticity.	H3
13	I ignore risks of plagiarism, misinformation, or bias in AI-generated content.	H4
14	I feel using AI tools too much might make me less able to think critically.	H5
15	I do not keep any record of AI interactions.	H6
16	I allow AI to replace my own analysis, writing, or creative works.	H7
17	I use AI tools haphazardly in academic tasks.	H8

The value for these statements was quantified with 1-5 score for strongly disagreed to strongly agree.

Table 3

Reliability Test through Cronbach's Alpha

Cronbach's Alpha Results	
All 15 Items (α = 0.9872)	Excellent reliability. The full questionnaire is highly consistent — respondents answer the 15 items in a very internally coherent pattern. A value this close to 1.0 confirms the scale measures a single underlying construct reliably.
Systematic use S1–S7 (α = 0.9713)	Excellent reliability. The 7 satisfaction items form a strongly consistent sub-scale. All items measure the same satisfaction dimension with very high agreement among responses.
Haphazard use H1–H8 (α = 0.9844)	Excellent reliability. The 8 hardship items are even more internally consistent. This sub-scale is extremely reliable for measuring the hardship dimension.
Benchmark Standard	All three alpha values exceed 0.90, placing them in the "Excellent" category per George and Mallery (2003). This means the questionnaire is trustworthy and ready for use in research or decision-making.

Source: Researcher's Calculation Using SPSS

Cronbach's Alpha (α) value for S1-S7 is 0.9872 and H1-H8 is 0.9713. So, these questionnaire and responses are reliable to use for analysis and decision making.

Results and Discussion

The Likert scale value (1-5) for 'strongly disagree' to 'strongly agree' were calculated, and analyzed with its mean and standard variance (SD). All statements related to systematic use were responded 'agree' to 'strongly agree', since the mean value range from 3.7-4.2 (

Table **1**). The overall meaning of respondents' view are analyzed through descriptive statistical analysis.

Table 4

Descriptive Analysis and Standard Deviation

Item	Mean	Variance	Std Dev (SD)	Interpretation of SD
S1	4.1646	0.5495	0.7413	Moderately consistent
S2	3.9494	0.6128	0.7828	Moderately consistent
S3	4.1139	0.5894	0.7677	Moderately consistent
S4	3.4684	1.2778	1.1304	High variability / mixed views
S5	3.962	0.5242	0.724	Moderately consistent
S6	3.962	0.5242	0.724	Moderately consistent
S7	3.6709	0.5826	0.7633	Moderately consistent
H1	2.1013	1.0153	1.0076	High variability / mixed views
H2	2.1899	1.0276	1.0137	High variability / mixed views
H3	2.1392	1.1983	1.0947	High variability / mixed views
H4	1.8987	1.0665	1.0327	High variability / mixed views
H5	2.7342	0.9669	0.9833	Moderately consistent
H6	2.9367	0.9062	0.9519	Moderately consistent
H7	2.481	0.8682	0.9318	Moderately consistent
H8	2.4937	1.0993	1.0485	High variability / mixed views

Source: Researcher's Calculation Using SPSS

Systematic use (S) items have means of 3.7–4.2 (tendency toward Agree/Strongly Agree). Haphazard use (H) items have means of 1.9–2.9 (tendency toward Disagree/Strongly Disagree). This seems the two groups measure opposite experiences, but they are agreeing upon the similar notion of AI use, i.e. they are agreeing on systematic use and disagreeing against haphazard use.

The two 'strongly agreed' statements 'I have clear objectives' and 'I check AI-generated contents' are resembled with 'goal setting' and 'feedback' elements mixing Zimmerman (2000)'s self-regulated learning (SRL) framework with Judgement of Learning (JOL) mechanism, which has recommended for the integration of AI in educational pedagogy. 'Goal

setting' required teaching better and relevant prompting skills for teachers and students while using AI chatbot (Chang et al., 2023). Students' responses had also indicated their clarity on their objective of using AI. The clear objectives support right and precise prompt provided to AI tools.

S4 is about acknowledging citations and references provided by AI tools, which stands out with the highest SD among S items (1.13), suggesting this question may be ambiguous or context-dependent. The term 'citation' and 'references' could be newer terms for undergraduate students, because they are less familiar with research paper writing related assignment.

In contrary to statements of systematic use of AI, statement related to haphazard use had all 'disagreed' by respondents, which mean they are disagreed upon all the statements related to haphazard use of AI. It means respondents argued that they are using AI in systematic way rather than haphazard use. These opinion-based results had explained the awareness against haphazard use. Most importantly, they are aware about the possibility of plagiarism while using AI, on which they stated 'strongly disagreed' upon ignoring plagiarism issues. All eight statements (H1-H8) were responded 'disagreed' by the respondents. The most impressive part is that respondents were 'strongly disagree' of committing any crime of plagiarism.

In regards of objective setting while using AI, and evaluating AI generated content, respondents were 'strongly agreed', while on selecting right AI tool, and acknowledging AI references, they have just 'agreed' upon. These four statements and two types of responses presented positive remarks.

The deliberate and planned application is systematic use, while in opposite, the unstructured, irregular, or even dependency-driven practices refers to haphazard use. Systematic use is characterized by intentionality, preparation, and alignment with academic objectives. Students should have learning goals in mind so that AI tool would be supportive rather than replacing tool. Consistent use promotes gains in time management, self-control, and academic writing. It enables students to collaborate with AI technologies as learning partners, assisting with content verification, drafting, revision, and brainstorming (Kasneci et al., 2023).

As the TAM suggested one of the significant elements is perceived usefulness (PU), which has been presented by the statement 'choose right AI tools' has been 'agreed' upon. Two 'strongly agreed' statements (S1 and S3) are related with SRL framework. The statement (S4) 'acknowledge citation and references' are related with AIF. Similarly, 'trust references without confirmation' (H3), 'ignore the risk of plagiarism' (H4), 'allow AI to replace analysis' (H7) are three statements supporting AIF that have 'disagreed' by respondents. Respondents have attempted maintaining the academic integration.

According to Cail (2025), undergraduate students' capacity to verify the accuracy of AI-generated literature reviews varied significantly according to their academic standing. Students in higher divisions showed greater critical assessment abilities and less faith in AI material than students in lower divisions. Sometimes AI tools generate contents which have no reliable sources. Therefore, it is necessary to check the AI-generated content and verify the reliable sources. In Nepal, the lack of subscribed database has limited possibility of cross-checking AI generated content with authentic sources.

According to researches, there are serious worries regarding undergraduate students' confidence in AI-generated citations and references. Day (2023) discovered that ChatGPT uses prediction algorithms rather than factual knowledge to produce phony academic citations, indicating that early hopes for AI research support may have been misguided.

The rechecking of AI generated references are very crucial as various studies suggested for (Bhattacharyya et al., 2023). Students who had experience with instructional AI, however, demonstrated enhanced trust in all forms of feedback and a better capacity to recognize AI content. The need of feedback is one of the essential elements of SRL framework too.

The reliance of undergraduates on the use of AI is in high rate (Johri et al., 2024; Olarewaju et al., 2025). Yet, the response on reliance over AI content has been 'disagreed' in this study. Finally, the Likert measuring scale shows that students disagree to the statements: use AI tools without understanding, rely solely on AI-generated responses, trust references without confirming, don't keep a record of AI usage, and allow AI to replace analysis. The students were aware of plagiarism issue. These results indicate that the students are not using AI tools haphazardly.

Moderately Consistent Responses from Undergraduates

Table 5

Interpreting Respondents' Consistency in their Responses

Standard Deviation (SD)	Interpretation
S Items (Systematic use) — SD range: 0.72 to 1.16	S items generally show low to moderate SD (< 1.0), meaning respondents agreed relatively consistently. S4 has the highest SD (1.13), indicating some disagreement — respondents had more mixed views on this item compared to others.
H Items (Haphazard use) — SD range: 0.93 to 1.09	H items show moderate SD (≈ 1.0), slightly higher spread than S items
Low SD (< 0.70)	Respondents answered this item very similarly — strong consensus.
Moderate SD (0.70–1.00)	Some variation, but responses cluster around the mean — moderate consensus.
High SD (> 1.00)	Responses are spread out — respondents had widely differing opinions on this item.

Source: Researcher's Calculation Using SPSS

S items generally show low to moderate SD (< 1.0), meaning respondents agreed relatively consistently. S4 has the highest SD (1.13), indicating some disagreement — respondents had more mixed views on this item compared to others. H items show moderate SD (≈ 1.0), reflecting variability in haphazard use. Slightly higher spread than S items, which indicated the more heterogeneous perceptions across individuals. The spread of their answer is likely to happen because undergraduate students lack proper guidance for using AI (
Table **7**), hence, some ethics related terminologies and concept could be new and unfamiliar for them. If they were trained with proper guidelines and formal way, they could have already aware about 'systematic use' and 'haphazard use' related concept. They are particularly inconsistent on H1, H2, H3 and H4 statements. These statements are related to their haphazard use of AI:

'I use AI tools without understanding or following ethical guidelines. '

'I rely solely on AI-generated responses without verifying them.'
'I trust references provided by AI without first confirming their authenticity.', and
'I ignore risks of plagiarism, misinformation, or bias in AI-generated content.'
'Respondents view is highly inconsistent in this statement.'
'Frequencies of AI use and Instruction Received.'

In addition to their stated views about AI use, two questions about how often they use AI (Table 6) and if they ever received instructions or training on the ethical use of AI tools were answered (Table 7). All respondents (81) use AI, moreover the highest number of respondents use AI every day.

Table 6

Frequency of Using AI by Undergraduates

Frequency of Using AI by Undergraduates	Frequency	Percent
Daily	44	54.32
Weekly	13	16.05
Occasionally	24	29.63
Never	0	0
Total	81	100

Source: Researcher's Calculation Using SPSS

Undergraduate students are using AI tools in daily basis for their needs. The highest number of students (54.32%) are using AI in daily basis. There was no one left of not using AI.

Table 7:

Instruction Received by Undergraduate on the Ethical Use of AI

Instruction Received by Undergraduate on the Ethical Use of AI	Frequency	Percent
In a Workshop	10	12.35
Informally through YouTube	29	35.80
No, although I know	31	38.27
No, I need it.	11	13.58
Total	81	100

Source: Researcher's Calculation Using SPSS

Only 12.35% students had learnt in a formal program like workshop. The highest percent of students (38.27%) had claimed they knew by themselves, while some significant students have mentioned the means by which they learned. Only few students (13.58%) had felt the need of training regarding AI use. It means the self-proclamation of learned skill should be tested by academic institution to ensure their proper use so that academic institution could help them using systematically. AI tools could provide whole text or some other form of information, not just guide to potentially relevant websites. So, AI generated information could be possible to lead users toward wrong track if they were not evaluated or cross checked before using them. Feedback is one of the most important element for using AI as recommended by SRF and also suggested judgement of learning (JOL) (Chang et al., 2023).

Conclusions

The opinion-based responses have reflected the systematic use of AI tools by undergraduates, yet the inconsistent responses reflected by moderate SD (.072 to 1.16) score which explained the responses being 'strongly agreed', yet there are 'disagreed' too. It has strong suggestions for the structured AI literacy skills. Undergraduates lack the proper feed-back from teachers related to proper use of AI tools, and in need of self-evaluation consistently after the use of AI for solving their problem. In short, undergraduates are aware about haphazardness while using AI, but they lack systematic guidance and guidelines prescribed in their studies.

Undergraduate students keep working with AI along the specific objective in mind, mostly in daily use. They cross checked the AI generated content, and acknowledge for the originators of the content, and idea. In that sense, they are ethical users of AI. They are disagreed to replace analysis task by AI. Most importantly, they are fully aware about the possible breach of the academic ethics through AI use.

Yet, the research results through standard deviation calculation have indicated the low to moderately consistent in their responses. The systematic use of AI is not equally true for all the responded, though it is the averagely true. There is the need of structured AI literacy programs for undergraduate students. The AI has been regularly in use, but the instruction provided to them is yet to include in academic activities. It is possible to follow haphazard process without guidance though students are in favor of systematic use.

Future research should adopt mixed-method design to triangulate self-reported survey data with behavioral observation and learning outcome measures, so that such research would be insightful for the relationship between AI use patterns and academic performance. Longitudinal studies tracking students across academic years would additionally illuminate on how AI literacy enhances with institutional support.

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