Investigating AI-Mediated Informal Digital Learning of English Practices among Indonesian Undergraduates

Muhsiyana Nurul Aisyiyah[1], Listiana Ikawati[1*]

[1] UIN Siber Syekh Nurjati Cirebon, Indonesia
*Corresponding author's email: listiana.ikawati@syekhnurjati.ac.id
https://orcid.org/0000-0003-1753-7640
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ABSTRACT

AI's unprecedented advancement has impacted various fields, including foreign language learning. This research aimed to investigate EFL students' engagement with AI for their informal English Learning and their perceptions regarding AI's practicality and challenges. Using an explanatory sequential mixed-methods design, this study carried out an online survey involving 82 students in the quantitative phase. It was followed by semi-structured interviews in the qualitative phase. Descriptive statistics and thematic analysis were employed to discover the patterns of AI's acceptance, students' voices on AI's usability, AI practicality, reasons for using AI, and analytical considerations. The quantitative phase indicates that the percentage of AI use is high (97.6%), but its usage frequency remains moderate. Students approved AI's usefulness for developing their vocabulary, assisting their writing, and regulating their own learning. Students also voiced concerns about accuracy and critical thinking loss (M=4.11) and overreliance. Semi-structured interviews with four students provided more profound insights that AI use was formed by accessibility and platform familiarity. Supporting the quantitative phase findings, students claimed AI as an easy, emotionally supportive, and helpful learning aid, but faced challenges to create effective prompts and to avoid dependency. This study implies that students' AI literacy advancement is mandatory to encourage more efficient, analytical, and independent AI-mediated informal language learning.

Keywords: Language Learning, AI mediated learning, EFL

Introduction

The rapid development of Artificial Intelligence (AI) is changing how people learn, including how they learn languages. Recently, the discourse on AI-mediated learning tools has gone beyond formal learning. In Indonesian higher education, where students learn English as a foreign language, formal learning still offers limited exposure to authentic language use (Lasagabaster, 2011). This provides opportunities for students to receive language input, use it, and revise their output immediately (Pokrivcakova, 2019; Liu et al., 2025; Song & Song, 2023).

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The advancement of AI chatbots such as ChatGPT is transforming information access, English writing experience, and vocabulary building without language instructor supervision (Ghafouri et al., 2024; Bekou et al., 2024). AI has increasingly been used in English as a Foreign Language learning as an efficient, affordable resource, lowering barriers for students who cannot afford expensive language tutoring or learning services (Cong-Lem et al., 2025; Luckyardi et al., 2024).

AI-mediated tools for learning foreign languages show promise. However, students' use of AI in informal language learning is uneven. Students often treat AI as an occasional helper rather than an integrated partner in their self-directed learning (Liu et al., 2025). Even though technology acceptance research emphasizes the role of perceived ease of use and usefulness in encouraging adoption (Al-Emran et al., 2018; Venkatesh & Davis, 2000), these studies tend to overlook how students negotiate deeper issues such as critical evaluation, dependence, and cognitive agency in AI-mediated contexts (Jou & Hao, 2026). Students could be lacking in AI literacy, according to present arguments, especially when it comes to maintaining intellectual autonomy, assessing output accuracy, and effectively prompting (Rahman et al., 2025; Spector & Ma, 2019). Furthermore, although AI can help students feel less anxious and alone, which can motivate them, this emotional reliance may result in over-reliance or reduce genuine communicative engagement (Jou & Hao, 2026; Ryan & Deci, 2017). Thus, many are concerned about students' AI dependency.

Studies on AI for EFL learning are growing, yet empirical data from Indonesian EFL students, especially the way students integrate AI into their informal learning habits and their perceptions of advantages and disadvantages, remain lacking. The literature has not adequately explored how practicality, self-regulation, emotional reliance, and critical thinking combine to support sustainable AI use in language learning, as most studies have focused on adoption and acceptance in general educational contexts (Al-Emran et al., 2018; Spector & Ma, 2019). This study attempted to integrate the Technology Acceptance Model with AI-IDLE and Self-Regulated Learning constructs to understand the reasons and ways in which Indonesian English as a Foreign Language (EFL) undergraduates engage with AI tools in the classroom and beyond.

Literature review

Adoption and Usability of AI in Informal EFL Learning

Familiarity with and access to AI-powered tools often determine students' use of these technologies. Compared to previously developed CALL technologies, the present AI chatbots are considered more intuitive, accessible, and affordable (Huang et al., 2022; Du & Reynolds, 2025; Liu et al., 2025). The intuitiveness of AI chatbots stems from underlying technologies such as large language models (LLMs), which enable them to evaluate context and sentiment and respond in ways that facilitate human-like conversation (Du & Reynolds, 2025). Unlike their predecessors, which were limited to a set number of conversational turns, LLM-powered chatbots can facilitate an unlimited number of conversational turns and foster spontaneous interactions (Du & Reynolds, 2025). In terms of accessibility, AI chatbots appear in mobile apps, social media, and intelligent tutoring systems (Du & Reynolds, 2025). This ease of interaction also supports learners' intent to adopt AI chatbots in informal English learning (Liu et al., 2025). Furthermore, Huang et al. (2022) in their systematic review identified pedagogical affordances (chatbots as interlocutors, simulations, transmission, helplines, and recommendations) and technological affordances (timeliness, ease of use, and personalization)

of AI chatbots.

The Technology Acceptance Model (TAM), which emphasizes perceived utility and usability as key factors in adoption (Al-Emran et al., 2018; Davis, 1989; Venkatesh & Bala, 2008), can explain current patterns of technology adoption in language learning. Learners usually use AI to complete specific tasks, such as summarizing, drafting, and proofreading, yet they rarely use it to practice speaking (Ghafouri et al., 2024; Allen & Mizumoto, 2024). This practical adoption shows that AI functions more as a practical learning assistant than a learning partner. This can limit genuine learning opportunities because it overlooks deeper linguistic engagement (Yang, 2025; Zhou & Li, 2026).

Motivation, Autonomy, and Affective Dimensions

In informal English learning environments, AI also promotes perseverance and reduces anxiety. During self-directed learning, students tend to perceive AI as a type of cognitive and psychological support. AI develops students' metacognitive strategies by assisting with learning goals, feedback, and progress. AI's individually customized and low-risk support can improve students' self-efficacy, confidence, optimism, and autonomous learning (He, 2025; Ren et al., 2026). This is in line with Self-Determination Theory, focusing on relatedness, competence, and autonomy, all of which promote intrinsic motivation (Ryan & Deci, 2017). AI technologies can encourage learner autonomy and agency with real-time feedback. Students can set their own goals and choose the tasks, pace, and learning strategies they want. Exercising agency means intentionally evaluating AI-generated responses. Students can then revise their prompts, select the relevant information, and revise their learning strategies based on the output. Opportunities to choose and act combined with the ability to reflect will help students take more control over their learning process and cultivate autonomy and agency (Jang et al., 2010; Reeve, 2016). However, there are potential risks related to this motivational benefit. Relying too much on AI for reassurance or encouragement may reduce students' need to interact with others in real life, which could harm the interpersonal aspect of language learning (Spector & Ma, 2019).

Challenges and Critical AI Literacy

AI-mediated informal learning has potential cognitive drawbacks despite its advantages. Technical difficulties such as limited free access and connectivity hinder equal engagement (Voronkova et al., 2025). Beyond access and connectivity, AI often produces overly formal, sophisticated responses and fabricated information, forcing students to assess and recheck AI-generated content (Hagendorff, 2024). Sometimes, the overly sophisticated language used by AI may also obscure users' ability to evaluate the information's accuracy (Yoo et al., 2025). These drawbacks can also affect students' trust and confidence in AI as a language-learning partner. The students also worry about originality and that cognitive outsourcing will reduce their creativity and critical thinking (Alzubi et al., 2025). The issues related to critical AI literacy need to be addressed.

Self-Regulated Learning and Learner Agency

The successful use of AI as a language learning partner also depends on students' self-control. Setting learning goals, tracking learning progress, and evaluating learning reflectively are key requirements of the Self-Regulated Learning (SRL) framework (Zimmerman & Bandura, 1994; Zimmerman & Kitsantas, 2014). Meeting these requirements may support metacognitive skills when used in relation to AI, guiding students to view AI as an adjunct rather than a substitute (Papamitsiou & Economides, 2019; Teng et al., 2026). Structured scaffolding lets students incorporate outside resources while retaining independence, according to research on Self-Regulated Strategy Development (SRSD) (Chamot & Harris, 2019; Mason, 2004). This is

consistent with more general discussions about autonomy in CALL, where autonomy is characterized by strategic, well-informed decision-making rather than unbridled freedom (Benson, 2013, 2016; Holec, 1981; Kessler & Bikowski, 2010). It is crucial to ensure that AI use supports students' agency rather than improving dependency.

Theoretical Framework

This study employed a complementary conceptual framework based on the original Technology Acceptance Model (TAM) (Davis, 1989), AI-assisted language learning (Li et al., 2025), problems and considerations related to output accuracy, over-reliance, academic integrity, ethical issues, and access issues (Spector & Ma, 2019), and Self-Regulated Learning (SRL) (Zimmerman & Bandura, 1994; Zimmerman & Kitsantas, 2014). Although later versions of TAM (TAM2 and TAM3) include more factors of technology acceptance, the original TAM model was selected because this study focused more on students' perceived usefulness and perceived ease of use instead of testing a comprehensive causal model of behavioral intention and actual system use (Venkatesh & Davis, 2000; Venkatesh & Bala, 2008). Its simple structure was helpful for the survey's findings on students' perceptions of AI tools. However, because TAM has limitations in explaining students' AI tool use beyond formal instruction and learning regulation, we included AI-IDLE (AI Informal Digital Learning of English) to capture informal, AI-assisted English learning. SRL provided a framework for students' goal-directed activities and for self-monitoring and critically evaluating AI-processed information in this context. This combined theoretical framework addresses different but closely related research questions about Indonesian EFL undergraduates' perceptions of technology, informal learning, and self-regulation.

Research Questions

A survey and semi-structured interviews were conducted to address the following research questions:

1. How do Indonesian EFL undergraduates engage with AI-mediated informal English learning?
2. How do Indonesian EFL undergraduates perceive its usefulness and challenges?

Methods

Pedagogical Setting & Participants

This mixed-methods study was conducted in the English Education Department at an Indonesian Islamic university. The target population consisted of 596 students enrolled in this department. As an inclusion criterion for the quantitative stage, students were required to have CEFR B1 or B2 levels. The department's annual English proficiency test determined their proficiency levels to monitor students' progress. Based on the 2025 test results, 162 students belong to CEFR B1 or B2 levels. These 162 students were considered the eligible population for this study and were invited to participate in the survey. The B1 and B2 levels were selected because these levels represent learners who are developing or have demonstrated the ability to use English independently. Thus, students at this level are considered to have sufficient ability to meaningfully engage with various AI-based tools in informal language learning. Because all 162 students who met the B1/B2 English proficiency criteria were invited to participate, the quantitative phase used a census approach to the eligible population.

Of the 162 students, 82 students voluntarily filled out the questionnaire, yielding a response

rate of 50.6%. The remaining 80 students were treated as non-respondents. The final quantitative dataset comprised 82 completed and valid responses. The participants ranged in age from 18 to 22 years old and were drawn from different cohorts during the odd semesters (1, 3, 5, and 7). 69 participants were female, and 13 participants were male.

In the qualitative phase, we used purposive sampling to select survey participants and capture diverse perspectives across gender and engagement level. The four participants consisted of two male students (semester 1 and semester 7) with low and high AI engagement, respectively, and two female students (semester 3 and semester 4) with moderate and high AI engagement, respectively. This purposive sampling aligns with qualitative research principles, prioritizing rich information over large samples (Patton, 2015). In terms of research ethics, all participants provided written informed consent, with assurances of voluntary participation, anonymity, and the right to withdraw at any stage of the research.

Design of the Study

This study used an explanatory sequential mixed-methods design (Creswell & Clark, 2025). The design was used to explore the quantitative patterns before exploring more diverse and deeper insights into AI-mediated informal EFL learning among university students. It was also more suitable than an exploratory design because the constructs under investigation (AI-mediated informal learning engagement and student perception) were already theoretically grounded (Li et al., 2025). Two phases were conducted in this design: (1) the quantitative phase, consisting of a self-report survey administered to measure students' AI engagement, perceived usefulness, and challenges in informal English learning; and (2) the qualitative phase, consisting of semi-structured interviews, exploring participants' lived experiences and processes regarding AI-mediated informal English learning. This design allows researchers to test students' adoption of AI statistically and understand it precisely.

Data collection & analysis

Quantitative Phase

A self-reflexive questionnaire measuring students' engagement with AI was adapted and reworded from Liu et al. (2025) on AI tool types and learning goals, Zimmerman & Bandura (1994) and Zimmerman & Kitsantas (2014) on independent learning strategies, Davis (1989) on students' voices of AI's usability and practicality from the Technology Acceptance Model, Li et al. (2025) on AI-assisted language learning, and Spector & Ma (2019) on challenges and considerations related to output accuracy, over-reliance, academic integrity, ethical issues, and access issues.

The questionnaire covering item wording, response options, and a construct-to-item mapping can be seen in the Supplementary Material. Twenty-two items with five -point response scales anchored at 1 (Strongly Disagree) to 5 (Strongly Agree). Higher scores indicated greater agreement with each item as worded. Therefore, a lower score on complete trust in AI-generated information indicates that students had lower agreement with full trust, whereas the dependence, critical evaluation, and concern items measure separate perceptions. The survey was administered in English, and no translation was needed. Two experts with expertise in AI and ELT assessed the content validity. Experts rated each item for relevance and clarity using a five-point scale with anchors. Aiken V was calculated for each item, and the mean score value across all items was 0.87. Experts' ratings and comments were used to review the items. No predefined numerical cutoff was applied.

The questionnaire was piloted with 15 students within the English Education Department. Once

the members of the pilot group were identified, the 15 students were prompted to take the main survey alongside fellow students. Although they took the pilot study, their responses were not included in the final data. We analyzed responses from the final version of the survey. There was a four-week gap between the pilot and the main survey. Internal consistency was assessed using the final dataset (N = 82), rather than the 15 participants involved in the pilot study. Cronbach's alpha coefficients were .84 for Ease of Use (3 items), .86 for Usefulness (4 items), .83 for AI Engagement (11 items), and .79 for Challenges (4 items). The 15 pilot participants were excluded from the final reliability analysis.

For two weeks, the online survey was distributed to students via Google Forms. Students' participation in this survey was anonymous and voluntary. Descriptive statistics were used to analyze the survey data. Descriptive statistics were used because the research questions were descriptive in nature. Since the research questions do not explore the relationship between variables or test different groups, inferential statistics were not used.

Qualitative Phase

In the qualitative phase, semi-structured interviews involving four students were carried out. For the purpose of confidentiality, the participants' names were replaced by codes. The first letter is always 'S' and the following number denotes the sequential order of the interview. S1, S2, S3, and S4 refer to 'student' 1, 2, 3, and 4, respectively. These codes were used throughout the transcription, analysis, and reporting and helped ensure consistency. The interview guideline included aspects of Indonesian EFL undergraduates' use of AI (AI-IDLE practices, types of AI-based tools, learning objectives, and AI availability) and their perceptions of AI (benefits, challenges, and emotional roles). Through the interviews, deeper and more varied students' perceptions of AI-IDLE could be obtained. In addition, the qualitative phase also aimed to uncover additional dimensions, such as emotional and affective dimensions, that might not be included in the survey.

Interviews were conducted in Indonesian to ensure participants were able to express themselves in the manner they deemed most comfortable. Each interview lasted for approximately 40 minutes. The interviews were recorded and then transcribed for further analysis. The second researcher verbatim transcribed the interviews. The second researcher also listened to the recordings and checked the transcriptions against the audio recordings to look for potential errors. Analysis was done in Indonesian. Quotations are translated in English by the second researcher and checked by the first researcher to maintain their original meaning.

This study adopted thematic analysis (Braun & Clarke, 2006) and inductive coding with deductive guidance from Li et al. (2025) to analyze the data. Braun's and Clarke's (2006) thematic analysis consists of six recursive phases: (1) familiarizing with the data by reading and re-reading the entire interview transcripts to better understand the data; (2) generating initial codes by systematically identifying and coding interesting features across the dataset; (3) searching for themes by grouping the codes that have been generated into potential themes; (4) reviewing themes by checking whether the themes work in relation to the coded extracts and the entire data set; (5) defining and naming themes by refining the specifics of each theme; and (6) producing the report by compiling the results analysis into a narrative report relating to the research questions and literature.

The first researcher did the coding. As an English education researcher interested in AI-facilitated learning, the coder understood that expectations and assumptions about AI's capabilities would affect data interpretation. The researcher used reflexive notes to document assumptions and expectations about AI's capability. In addition, reflexive notes were used to

reflect alternative interpretations when participants expressed limitations and/ or negative experiences. Codes were generated from repeated readings of the transcripts. Initially, the codes were label-based. We defined labels and provided inclusion/exclusion criteria. Illustrative examples were provided. The working codebook was revised throughout the comparison of codes across the four interviews. Codes were done manually in Word while codes and candidate themes were listed in Excel. The second researcher reviewed the coded excerpts and candidate themes. Differences in interpretation were discussed with reference to the original transcripts, and the resulting decisions were documented.

The study used member checking, peer debriefing, and data triangulation with survey-informed sampling to ensure reliability. Summaries of interviews, along with preliminary interpretations, were provided to all four participants. Three participants confirmed the summaries as provided. The remaining participant clarified that using AI frequently did not mean accepting its responses without question. This clarification informed the interpretations of AI engagement and trust.

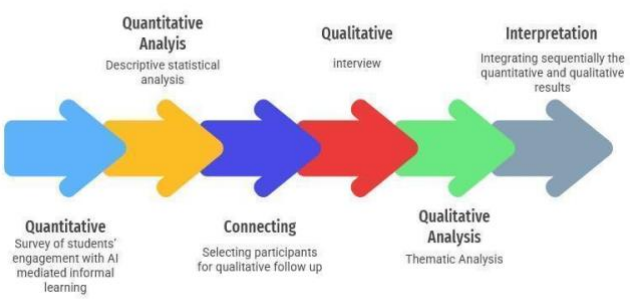
Ethical approval for this study was obtained from the Institute of Research and Community Engagement (IRCE) of the university under the approval number 582/Un.30/L.I/TL.03/9/2025. Before completing the survey, students received an information sheet explaining the study's purpose, procedures, data to be collected, and intended use of the findings. Written informed consent was obtained from all participants. Participation was voluntary, and students were informed that declining participation would not affect their academic standing or relationship with the department. Interview participants provided additional consent for audio recording. Participants could decline individual questions without penalty. They could request withdrawal of identifiable interview data until 15 September 2025. Because survey responses were anonymous, individual responses could not be identified and withdrawn after submission. Research data were stored on the researchers' Google Drive, with access restricted to both researchers only. Interview transcripts were labeled using participant codes. Data will be retained for two years and subsequently will be permanently deleted.

Integration of Phases

The two phases were integrated through joint displays, linking survey-based profiles with interview narratives. This allowed for convergence (e.g., usefulness linked to writing support) and divergence (e.g., high-engagement users expressing skepticism about AI accuracy), enriching the interpretation of AI-mediated informal learning. The flow of the research phases is illustrated in the following figure.

Figure 1.

The flow of the research phases



Results

Quantitative findings on EFL undergraduates' engagement with AI-mediated informal English learning and the perceived benefits and challenges

In the quantitative phase, we administered a self-report survey to measure students' AI engagement, perceived usefulness, and challenges in informal English learning. 82 students participated in the survey.

Table 1.

Descriptive Statistics of Students' Perceptions on AI Tools in Informal English Learning (N = 82)

No	Items	Mean	SD	Min	Max
1	AI tools are easy to use.	3.98	0.72	2	5
2	I easily understand the information provided by AI tools.	3.83	0.74	2	5
3	Learning to use AI tools is easy.	3.86	0.77	2	5
4	AI tools improve the quality of my English learning.	3.60	0.83	1	5
5	AI tools help me learn English more effectively.	3.65	0.82	2	5
6	AI tools open more opportunities for English learning.	4.01	0.79	2	5
7	AI tools improve my overall English proficiency.	3.70	0.86	1	5
8	I am willing to spend time learning how to use AI tools better.	3.76	0.79	2	5
9	I will continue using AI tools to learn English in the future.	3.58	0.88	1	5
10	I use AI tools to increase my interest and motivation in learning English.	3.66	0.83	2	5
11	I use AI tools to improve my speaking skills.	3.62	0.87	1	5
12	I use AI tools to improve my listening skills.	3.66	0.84	1	5
13	I use AI tools to improve my reading skills.	3.98	0.76	2	5
14	I often ask AI to directly draft English texts for me.	3.37	0.93	1	5
15	I only use AI as an assistant.	3.81	0.85	1	5
16	I use AI tools to improve my writing.	3.80	0.81	2	5
17	I use AI tools to gather English learning materials I need.	3.89	0.80	2	5
18	I use AI tools to understand English language and culture better.	3.72	0.82	2	5
19	I feel dependent on AI tools for learning English.	3.24	0.95	1	5
20	I fully trust the information given by AI tools.	2.46	0.98	1	5
21	I still process and critically evaluate the information provided by AI tools.	3.98	0.74	2	5
22	I worry that dependence on AI tools may reduce my critical thinking ability.	4.11	0.82	2	5

The survey results revealed a complex picture between appreciation and apprehension regarding how Indonesian EFL undergraduates use artificial intelligence in their informal language learning. The survey indicates a high percentage of AI's usability and practicality (M = 3.65- 4.01). It suggests that students confidently use AI and appreciate its benefits.

Students discussed how they utilized AI for several types of language learning tasks. The highest mean scores were observed for tasks such as finding word definitions, brainstorming, summarizing, and proofreading texts (M = 3.80 - 3.98). AI use for listening and speaking tasks received relatively high mean scores (M = 3.62 - 3.66), with values that were lower than for vocabulary- and text-related tasks. Since the study used descriptive statistics and did not test whether mean differences existed between items, the results do not indicate a statistically significant preference for text-based tasks when using AI. The results show AI was used across

language tasks such as reading, writing, and vocabulary tasks.

Another trend the study found is a conflict between autonomy and reliance. The survey indicates students' eagerness to learn more about AI's effective use (M = 3.76) and a continued plan to use it (M = 3.58). The item "I fully trust the information given by AI" obtained a mean score of (M = 2.46). Since a lower score indicates disagreement, it suggests that students tended not to express full trust in information generated by AI. Concerns about AI reliance (M = 3.24) and worries about critical thinking loss because of AI (M = 4.11) were also reported. Most students remained doubtful and analyzed AI responses critically (M = 3.98), showing they did not fully trust AI. Thus, students appreciate AI's usability yet refuse to fully depend on AI, as proven by their critical evaluation, concerns about dependence, and determination.

Overall, the data suggest that students are open to the technology, yet they are still negotiating AI's place in their learning environment. Currently, AI is seen more as a valued learning assistant than a major driver of language development. Students use it strategically for reading and writing. However, students consciously keep a distance to minimize overreliance. This finding suggests the need for critical AI literacy. Students need to be taught how to use AI effectively while carefully controlling how the technology affects their thinking.

Qualitative findings on the perceived advantages and difficulties of AI-mediated informal English learning among EFL undergraduates

Table 2.
Qualitative Findings on Students' Involvement with AI mediated informal language learning

Indicator	Participant Quotes (S1–S4)	Coded Theme
AI Access and Early Use	*"I started to use AI when I started my university life. I need to look for journals and articles. This is a new experience for me." (S1)* *"Mostly I use ChatGPT because it is easy to use and familiar." (S4)* *"I used social media to learn English. Then, I moved to AI such as ChatGPT and Perplexity to learn more about English." (S2)*	AI adoption formed by familiarity and accessibility
Ease of use & prompting	*"It is easy to use AI when we know how to lead it… I learned how to 'teach' AI from a course." (S3)* *"It is tricky. Sometimes the results of my prompt are not what I expected." (S4)* *"The language used by AI is too formal and fancy." (S1)*	Perceived ease of use while having difficulties in prompting and comprehension
Motivation & learning activities	*"I use AI almost every day, even for answering simple questions and conversation." (S2)* *"I use AI for summarizing and improving my writing. But I do not use it every day because I'm worried of being too dependent."* (S3) *"I use AI to help me brainstorm my thesis proposal ideas."* (S4) *"We can practice conversations or do quizzes at any moment."* (S2)	Flexible, task-driven learning habits influenced by motivation and caution against overuse
Perceived usefulness for skills	*"I use AI to help me write essays and articles, compare drafts, and give me suggestions for more suitable vocabulary." (S3)* *"I use AI to help me understand new words I got*	AI as a helpful support for writing and vocabulary development

	from social media and movies." (S1) *"AI helps me to proofread my essays and check my grammar.: (S2)*	
Affordability & learning support	*"AI is cheap. When I use AI, I do not need a tutor or join a course. I can study anytime and anywhere." (S3)* *"Learning using AI, I just need an internet quote with no other costs." (S1)* *"AI is fast and practical when we need to complete tasks quickly." (S4)*	Practicality, affordability, and time-efficient learning support within self-directed contexts
Challenges & barriers	*"AI answers are often too formal and not always accurate." (S2)* *"AI often gives me made-up references or journal articles." (S1)* *"Free users have limited access, sometimes I have to pay to use all AI features." (S2)* *"When using my phone to access AI, I get easily distracted." For instance, when I am using AI on my phone, I frequently receive some notifications from social media which ultimately makes me tempted to check them out and get distracted." (S3)* *"I'm afraid I'll be addicted to AI to the point of asking AI to do even small things." (S4)*	Technical difficulties, accuracy assessment, and overreliance and distraction risks
Critical thinking & trust	*"I do not fully trust AI, not 100%. I still need to check again and critically assess AI responses." (S3)* *"Sometimes people just copy-paste AI results without checking; that's dangerous."* (S3) *"It makes people lazy; they just copy and paste without reading."* (S1) *"I'm worried of losing my ability to think critically if I rely too much on AI."* (S3) *"I always double check journal summaries from AI because sometimes it's fabricated."* (S4)	Healthy skeptical attitude toward AI results mixed with fear of losing originality and intellectual skills
Emotional & motivational role	*"Sometimes when I feel depressed or lonely, I just talk to ChatGPT to share my feelings."* (S2) *"AI motivates me to keep learning English."* (S2) *"AI makes learning quicker and more effective; I can finish my tasks fast."* (S1)	AI as both an emotional companion and a motivator for self-directed learning

AI adoption formed by familiarity and accessibility

The interview found that accessibility and platform familiarity were important factors in students' adoption. Students considered AI accessible and simple to use compared to previously developed language-learning technologies that required institutional support. This implies that, at the beginning, students adopt AI for its easy access. During the interview, most participants (S2, S3, and S4) said that since they were admitted to university, they adjusted to AI effortlessly, and it has become part of their internet routines. They previously relied on social media content or Google searches for English learning, but now AI tools like Perplexity and ChatGPT have helped them learn faster and more personally.

Although AI's accessibility is an important reason why students use AI, their adoption is not intentionally academic, but pragmatic. The interview reveals that AI's accessibility, ease, and

speed encourage them to use it (S2, S4). Participants' preference for convenience was evident in their references to AI's accessibility, familiarity, and speed. There is no clear evidence that students used AI strategically for language development simply because of convenient access. Their accounts included few examples of planned, purposeful language-learning practices, such as goal setting, refining prompts, evaluating generated responses, and tracking progress. This indicates a need for scaffolding that helps students move from novice-level AI use to planned, deliberate use for learning.

Perceived ease of use while having difficulties in prompting and comprehension

Although students felt AI was simple and easy, their experiences indicate a persistent gap between basic usability and functional mastery. During the interview, most students (S1, S3, and S4) reported that the initial interactions were straightforward, especially after being given prompts for a short period of time, but they quickly became unhappy when the outcomes did not match their expectations. The interview also revealed that AI responses were often too formal and sophisticated, making comprehension difficult (S1 and S2). Therefore, the skill to prompt effectively is needed. This finding has a pedagogical implication: accessibility alone does not guarantee meaningful learning outcomes. Students may engage with AI superficially. This could limit both learners' language development and their confidence in using AI. To address this issue, literacy training should involve recursive prompting and critically modifying responses to specific learning goals.

Flexible, task-driven learning habits influenced by motivation and caution against overuse

This theme captures the patterns of AI use and task-driven learning behaviors by students. Students' initial, pragmatic, and spontaneous adoption of AI suggests they use it because of its fast, simple feedback. Students also show cautious self-constraints and are conscious of AI over-dependence that may challenge their autonomy (S3 and S4). Their hesitant attitudes reflect the conflict between individual and technological autonomy. Students claimed that they used AI for specific tasks, but they maintained autonomous English learning practices while using it (S2, S3, and S4). Some used it to address specific needs, such as summarizing texts or writing essays (S3 and S4), while others said they used AI almost every day to stay motivated and engaged in informal English learning (S2). It illustrates a useful, on-demand method of learning, where incentive is drawn from AI timeliness and ease. This appears to be an adaptive self-regulation mechanism. Hence, metacognitive training is needed to help students balance convenience with intentional skill gain.

AI as a helpful support for writing and vocabulary development

Students also frequently said that AI could support vocabulary development and writing improvement in formal education. They considered AI as a helpful and affordable learning partner. AI was said to be helpful in academic tasks such as drafting, understanding new words, proofreading essays, and providing feedback on grammatical accuracy (S1, S2, and S3).

Practicality, affordability, and time-efficient learning support within self-directed contexts

Students' perceptions of AI's practicality, affordability, and efficiency in supporting independent learning are reflected in their statements that AI is accessible and cheap (S1 and S3). Besides, it assists them in finishing their academic assignments instantly and quickly. This suggests that AI's on-demand assistance allows students to learn flexibly and independently, based on their needs (S4).

Technical difficulties, accuracy assessment, and overreliance and distraction risks

During the interview, students also mentioned technical problems, like poor internet connection and AI's paid features reducing their enthusiasm for using AI (S1 and S2). Inaccurate information, such as fake references suggested by AI, was also highlighted by S1. Therefore, before using it, students need to evaluate the accuracy of AI's responses, reducing reliance on AI. Nevertheless, students were frequently distracted by notifications or other applications when accessing AI on their mobile phones (S3).

Despite the technical issues, psychological problems between autonomy and dependency are also experienced by students. Students appreciated AI for its efficiency in helping with their academic tasks, but one of the students (S4) expressed his fear that he might lose his creativity and become too dependent on it. It depicts the challenges of AI incorporation in English language learning. Education needs to help students assess AI's accuracy and maintain their learning autonomy. This can be done by developing students' critical literacy in using AI.

A healthy, skeptical attitude toward AI results mixed with fear of losing originality and intellectual skills

Students demonstrated cautious but analytical attitudes when using AI. Some students claimed that they frequently evaluated AI feedback (S3 and S4), which indicated their critical literacy. Furthermore, S3 expressed concerns about losing her capacity to think critically and creatively due to excessive AI use. This conflict of opinion shows the opportunities and challenges of AI use in language learning. Hence, proper guidance on how to use AI in language learning is needed.

AI as both an emotional companion and a motivator for self-directed learning

This theme captures students' affective dimension (emotional support, anxiety reduction, and companionship) when using AI. Besides playing a role as a cognitive tool, AI helps students stay motivated and decrease feelings of isolation (S1 and S2). S2 claimed that she felt less isolated and confused when she learned independently using AI. AI's neutral responses and availability encourage students to treat it as a reliable conversational partner. It supports students' emotions, especially those with limited access to direct feedback from teachers and friends. AI also encourages students to learn continuously, to set their goals in a personalized manner, and to finish their tasks. This suggests that AI has become a learning companion and source of psychological support for students. However, despite its role in promoting persistence in self-directed learning, motivational reliance may still occur. AI's role as a psychological companion can also replace educational support from teachers and friends, as well as social interactions. While maintaining their internal learning motivation and real social connections, students are required to benefit from AI's potential efficiently.

Table 3.

Joint Display of Quantitative and Qualitative Findings

Quantitative Findings (Survey, N=82)	Qualitative Themes & Quotes (S1–S4)	Integration Relationship	Integrated Interpretation	Meta Inference
Adoption is nearly universal.	Adoption shaped by accessibility and platform familiarity *"I started using AI when I entered*	Convergence	Students adopt AI mainly because it is accessible and familiar.	AI is an available learning resource for students.

	college… it's familiar and easy to reach." (S1)			
Ease of use and usefulness are moderately high — Ease (M = 3.98), understanding (M = 3.83), effectiveness (M = 3.60 – 3.65).	Perceived ease of use but ongoing prompting and comprehension challenges "*It's easy… but sometimes my prompt doesn't match what I expect."* (S3)	Complementarity and divergence	Quantitative data shows AI is easy and useful; qualitative insights reveal a literacy gap in prompting and adapting complex outputs, indicating ease ≠ mastery.	Students acknowledge AI's accessibility and ease of use, but AI literacy is required to evaluate the accuracy of AI responses.
Greatest practical benefit for text-based tasks — Reading support (M = 3.98), proofreading/brain storming (M = 3.8); lower for speaking/listening.	AI as a practical, low-cost support for writing, vocabulary, and independent study "*AI helps me write essays… find new vocabulary."* (S1)	Convergence and complementary	AI is valued for affordable, time-saving support in writing and vocabulary; both data strands show a general trend of pragmatic AI use across language skills and descriptive AI use skewed toward vocabulary and text-related support. Oral-skill use was also detected and should not be described as limited.	Students' AI IDLE is mostly leaning toward immediate and text-related assignments but does not exclusively present AI as a reading and writing learning tool.
Motivation to use balanced by fear of dependence — Willingness to learn AI (M = 3.76), intention to continue (M =	Flexible, task-driven learning habits influenced by motivation and caution against overuse "*I use AI but not every day*	Convergence and complementary	Students are motivated and self-directed but also deliberately regulate use to maintain	Students' interaction with AI demonstrates a balanced attitude between

3.58), concern about dependency (M = 3.24).	*because I'm afraid of being dependent."* (S3)		independence, aligning with moderate survey scores.	maintaining autonomous learning and perceiving learning benefits.
Low blind trust and concern for critical thinking — Blind trust (M = 2.46), worry about thinking loss (M = 4.11).	Technical limitations, accuracy concerns, and risk of overreliance *"Sometimes the answers are inaccurate… I'm afraid of becoming addicted."* (S4) Skeptical view about intellectual ability reduction *"I don't blindly trust AI … I am worried about losing my ability to think critically."* (S3)	Convergence and complementary	Both strands show students critically evaluate AI but worry about dependency and intellectual passivity; assistance on literacy is necessary to balance caution with productive use.	Students' awareness of decreasing critical literacy does not guarantee effective evaluation. Therefore, AI responses should be verified, critically evaluated, and responsibly used.
Moderate willingness to invest in learning AI better — Willingness/time (M=3.76), intention to continue (M=3.58).	AI plays a dual role as an emotional partner and inspiration for independent learning "*When I am depressed or lonely, I talk to ChatGPT… it helps motivate myself."* (S2)	Complementary	While surveys indicate an intention to continue, interview results show a further emotional aspect: AI keeps students stay motivated and reduces isolation.	Students' AI IDLE may not only provide cognitive and practical assistance, but also emotional support. It enriches the understanding of students' engagement with AI.

A comprehensive yet multifaceted portrait of Indonesian EFL students' adoption and use of AI for their informal English learning is presented. Learners' adoption of AI is mostly due to its accessibility, familiarity, and ease of use, particularly through some popular AI-based tools like ChatGPT and Perplexity. However, the reason why students engage in AI is mostly pragmatic and task-oriented. It implies that AI has successfully become a convenient companion for students' informal learning practices, but has not yet been integrated into their strategic long-term learning plan.

A literacy disparity was revealed during the interviews, despite the survey's slightly high scores for AI's ease of use and usefulness (M=3.6–4.0). Students said they still struggled to create appropriate prompts despite the straightforward interfaces. They further stated that AI seldom provided them with responses that were overly formal, irrelevant, and complicated. This indicates that AI's perceived ease of use does not guarantee students' mastery. Despite its

perceived ease of use, students still have not been able to effectively use AI to achieve the best learning. Thus, developing students' AI literacy in prompt design and appropriate ways to use AI's outcomes is strongly emphasized.

Data from both phases show AI as an affordable, helpful choice that supports students in writing, mastering vocabulary, and learning independently. The interviews also highlighted AI as a profitable, effective, and free assistance. It mostly helps students complete text-related assignments, such as reading, summarizing, and proofreading. Despite its potential, AI remains largely unexplored in terms of its speaking and listening skills. AI's ability to modify text motivates students to use it, although they have not yet used it as a partner to improve their communicative competence.

A conflict between motivation and independence is continuously found across both phases. The quantitative phase revealed students' worry about dependence on AI (M=3.24), yet they were willing to keep using AI and ready to deepen their understanding of AI use (M=3.76). The interview clarifies this by showing that students appreciate AI's capability to motivate students to learn and lessen their workload stress, but they were cautious about using it to maintain their autonomy and avoid laziness. Meanwhile, they expressed healthy skepticism toward AI outputs, actively cross-checking information and avoiding blind trust (supported by the low blind trust score, M=2.46). Nevertheless, there is an increasing concern about losing original ideas and thinking critically (M=4.11), indicating a cautious but hesitant attitude toward AI incorporation.

Finally, although the survey did not specifically measure it, the qualitative phase adds an affective dimension of AI as an inspiring and emotional partner. Students mentioned that they used AI during their stressful or lonely times in their studies because of its helpful, accessible, and neutral responses. The quantitative results and persistence in self-regulated learning are strengthened by this socio-affective effect. Nevertheless, to prevent students from becoming overly dependent on AI and missing real human interactions, this reliance needs to be monitored.

Discussion

Based on the study's findings, despite AI's widespread acceptance, Indonesian EFL students use AI in a task-focused, situational way. Topsakal (2025) and Liu et al. (2025) support this by claiming that AI's ease of use and platform familiarity determine their early adoption. Similar to other students in different educational contexts (Liu & Zhao, 2025; Guan et al., 2024), this study's participants acknowledged AI's potential for providing fast feedback and practical use, especially to finish text-related assignments. This suggests that in informal language learning, efficiency can override communicative competence.

A discrepancy in the ability to create prompts and comprehend AI feedback persists despite AI's ease and moderately effective use. Students underscored the fact that usefulness was not equal to mastery by noting difficulties in producing appropriate prompts and comprehending overly formal outcomes. Similar concerns have been investigated in studies that highlight the importance of critical AI literacy, where students must advance from basic familiarity to planned, skill-driven use (Rahman et al., 2025; Spector & Ma, 2019). As a result, this study contributes to the growing understanding that to achieve the best learning outcomes, AI acceptance in informal learning requires specific training in metacognitive methods and prompt engineering. A similar finding was also reported by Al Taqataq et al. (2025), highlighting that prompt engineering training and development of curricula integrating decision-making

opportunities, and attention to regulations endorsing flexible learning platforms are vital for students' personalized learning using AI.

The tension between reliance and motivation is another subject of this study. This study reported that AI technologies sustained their participation and reduced their workload stress, but they also had the same fear of overdependence on AI (Hagendorff, 2024; Ryan & Deci, 2017). By using AI's scaffolded support, students manage their learning more flexibly while expressing concerns about potentially losing autonomy. This suggests that students need to reflect on their own learning when using AI to integrate it effectively into informal learning, allowing them to balance excitement with critical restraint.

Furthermore, data also uncover the emotional aspect of AI, which is treated as a student's intellectual and emotional companion during their stressful and lonely times. Earlier studies reveal that AI has a socio-affective effect that maintains students' perseverance and reduces their fear in learning (Qi, 2025; Ryan & Deci, 2017; Elov et al., 2025). While it improves informal learning, this dual role also raises pedagogical concerns because overreliance on AI for emotional support could reduce real social connections and erode intrinsic motivation. Consequently, lecturers must encourage students to incorporate AI into their learning in a balanced manner to avoid it replacing the roles of lecturers and partners.

Lastly, students' frequent concerns about the accuracy and reliability of AI's output pointed to fabricated sources, excessive formal responses, and disruption of the system. Previous research also highlights the advantages and disadvantages of AI-mediated learning. AI may facilitate access and speed up students' assignment completion, but it needs serious examination (Hagendorff, 2024; Spector & Ma, 2019; Baule & O'Connell, 2025). It suggests that students are starting to develop a fundamental basis of critical AI literacy but still need to change skepticism into productive critical engagement.

The results suggest that rather than being the primary cause of informal English learning, AI now acts as a helpful assistant. This study builds on previous findings by showing how students evaluate the benefits and drawbacks of using AI, weigh options, and adopt a skeptical attitude. Assistance and autonomy, and motivation and caution. These results emphasize the need for AI literacy programs integrating technical, intellectual, and emotional aspects to ensure that students benefit from AI's capabilities while maintaining their ability to think creatively and critically, and to learn autonomously in informal learning. This aligns with Saleh and Alshewiter (2025), who suggest that curriculum developers and EFL educators in Saudi Arabia should integrate AI-based conversational tools into EFL students' informal learning to boost digital literacy and emotional engagement.

Conclusion

According to this study, AI is often used by Indonesian EFL students for informal English learning, but their participation is still pragmatic and task-oriented rather than fully incorporated into a long-term learning plan. The qualitative results revealed that the students appreciated AI's practicality, yet there is still a substantial gap between their prompting ability, analytical skills to evaluate AI's responses, and strategic use of AI. AI's affordability, accessibility, and emotional support motivate students, but they also remained skeptical and controlled its use because they feared becoming too dependent on AI and losing their critical thinking and creativity. This finding suggests that AI is considered an affordable and useful tool for autonomous learning, yet calls for structured guidance for students on AI use that evolves from informal or casual use toward skill-based applications. This study broadens TAM insights by

integrating AI-IDLE and SRL theories, suggesting that AI use stems not only from practicality but also from critical analysis and self-regulated learning. This study also presents profound analysis, particularly in the Indonesian EFL student context, that students' AI use is highly task-driven, accompanied by apprehension of overreliance and a decrease in critical thinking.

Nevertheless, the limitations of this research necessitate a more in-depth investigation. Although the sample size is adequate for mixed-method research, generalization might still be constrained. The qualitative data revealed rich themes from the sample's small size. In addition, this study relied on personal interpretations rather than fully neutral evaluations. Future studies should use bigger, more varied samples; evaluate AI continuously; and focus on students' language outcomes to investigate its use over time and effects on students' competency.

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Biodata

Muhsiyana Nurul Aisyiyah *has been an English Education Department lecturer at UIN Siber Syekh Nurjati Cirebon, Indonesia, since 2019. Specializing in applied English linguistics, she actively researches English Education, TELL, and literacy, and publishes in accredited national journals.*

Listiana Ikawati *is a lecturer in the English Education Department of UIN Siber Syekh Nurjati Cirebon, Indonesia. With six years of teaching experience and expertise in English linguistics, she actively conducts research in TELL, literacy, linguistics, and English education. She also publishes articles in some accredited national journals.*