

# PATTERNS OF AI-ASSISTED WRITING USE AMONG EFL FRESHMEN: EVIDENCE FROM AN ENGLISH WRITING COURSE IN VIETNAM

SỬ DỤNG AI TRONG VIẾT HỌC THUẬT CỦA SINH VIÊN NĂM NHẤT:  
NGHIÊN CỨU TẠI MỘT HỌC PHẦN VIẾT TIẾNG ANH Ở VIỆT NAM

Nguyen Thi Lan<sup>1,\*</sup>

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## ABSTRACT

The increasing use of generative artificial intelligence (AI) tools has reshaped English as a Foreign Language (EFL) writing, yet limited research has examined how students use AI across writing stages and how such use relates to both perceived learning benefits and potential risks. This study surveyed 166 Vietnamese EFL freshmen in an English writing course, using a quantitative design. In the study, AI use patterns (frequency, purposes, and writing stages) and their relationships with perceived writing improvement, dependency, and concerns are examined. The findings show that generative AI tools are widely used, particularly for idea generation and language support, with greater use during drafting stages of the writing process. Regression results indicate that AI use across writing stages is positively associated with perceived writing improvement, student dependency, and AI-related concerns. The study highlights the need for process-oriented, guided integration of AI into EFL writing instruction.

**Keywords:** *AI-assisted writing; writing process; student dependency; AI-related concerns; EFL freshmen.*

## TÓM TẮT

Việc sử dụng ngày càng phổ biến các công cụ trí tuệ nhân tạo tạo sinh đã làm thay đổi hoạt động viết tiếng Anh như một ngoại ngữ (EFL), tuy nhiên vẫn còn ít nghiên cứu xem xét cách sinh viên sử dụng AI ở các giai đoạn của quá trình viết và mối liên hệ của việc sử dụng này với lợi ích học tập và các rủi ro tiềm ẩn. Nghiên cứu này khảo sát 166 sinh viên năm nhất chuyên ngành tiếng Anh trong một học phần viết tiếng Anh. Với thiết kế định lượng, nghiên cứu phân tích các mô hình sử dụng AI (tần suất, mục đích và các giai đoạn viết) cùng mối quan hệ của chúng với nhận thức về sự cải thiện kỹ năng viết, mức độ phụ thuộc và các mối quan ngại. Kết quả cho thấy các công cụ AI tạo sinh được sử dụng rộng rãi, đặc biệt trong việc phát triển ý tưởng và hỗ trợ ngôn ngữ, với mức độ sử dụng cao hơn ở giai đoạn soạn thảo trong quá trình viết. Kết quả hồi quy cho thấy việc sử dụng AI ở các giai đoạn viết có mối liên hệ thuận với sự cải thiện cảm nhận được, mức độ phụ thuộc của sinh viên và các mối quan ngại liên quan đến AI. Nghiên cứu nhấn mạnh sự cần thiết của việc tích hợp AI theo định hướng quá trình và định hướng trong dạy học viết EFL.

**Từ khóa:** *Viết có hỗ trợ AI; quá trình viết; mức độ phụ thuộc của người học; các mối quan ngại khi sử dụng AI, sinh viên năm nhất học tiếng Anh như ngoại ngữ.*

<sup>1</sup>Hanoi University of Industry, Vietnam

\*Email: lannt\_nn@hau.edu.vn

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## 1. INTRODUCTION

The rapid development of AI, particularly generative AI tools such as ChatGPT, Grammarly, and QuillBot, has

significantly transformed English writing instruction in higher education. In EFL contexts, these tools are increasingly used to support multiple aspects of the

writing process, including idea generation, grammar correction, vocabulary enhancement, and revision. Recent studies indicate that AI-assisted writing tools can improve linguistic accuracy, writing quality, and learner motivation by providing instant feedback and individualized support [1, 2]. As a result, AI is becoming an integral part of contemporary writing instruction. However, concerns have also been raised regarding overreliance on AI, reduced critical thinking, and the need for clearer guidance on ethical AI use in academic writing [3].

In the Vietnamese higher education context, AI-assisted writing has gained increasing popularity among EFL learners. Empirical studies have shown that students frequently use AI tools across different writing tasks and perceive them as useful for grammar checking, vocabulary development, and idea generation [4]. However, existing research has largely focused on students' perceptions or general usage [3, 4], with limited attention to how AI is integrated into specific course contexts, particularly foundational writing courses where students are still developing essential academic writing skills. In addition, prior studies have rarely examined AI use from a process-oriented perspective, how AI is used across different stages of writing, such as planning, drafting, and revising. Emerging concerns have also been reported regarding the accuracy of AI-generated content, potential plagiarism, and the influence of AI on writer identity [5].

Despite growing interest in AI-assisted writing, several important gaps remain. First, there is a lack of detailed evidence about how students use AI across different stages of writing, which is crucial from a process-writing perspective. Second, empirical research in Vietnamese EFL contexts, particularly at the course level, remains limited. Third, relatively few studies have simultaneously examined AI use patterns with both positive outcomes and potential risks. Addressing these gaps is vital in first-year writing courses, where students are still developing foundational writing skills and are learning how to use digital tools responsibly.

Building on these gaps, the present study makes three contributions. First, it adopts a process-oriented perspective to conceptualize AI use across writing stages, providing a deeper understanding of how AI is embedded in the writing process. Second, it examines the relationships between AI use patterns, stage-based integration, and multiple learner outcomes, including perceived writing improvement, dependency, and

concerns. Third, it provides empirical evidence from a Vietnamese EFL context at the course level, thereby contributing context-specific insights to the growing body of research related to AI-assisted writing.

This study investigates AI tool use in an English Writing Skills 1 course among first-year EFL students at Hanoi University of Industry. Specifically, it examines the frequency and purposes of AI use, as well as how AI tools are integrated across different stages of the writing process. It also explores how AI use across writing stages is associated with perceived writing improvement, dependency on AI tools, and concerns about AI use. Accordingly, the study addresses the following research questions:

**RQ1:** *What are the patterns of AI tool use among students in English Writing Skills 1, including frequency, purposes, and stages of use?*

**RQ2:** *How does AI use across writing stages relate to perceived writing improvement, dependency, and concerns?*

## 2. LITERATURE REVIEW

This section reviews relevant research on AI-assisted EFL writing. The review first outlines the role of AI-assisted writing in language learning and writing process theory as a framework for understanding how AI tools are used across different stages of writing. It then synthesizes studies on patterns and purposes of AI use as well as perceived benefits and challenges. Finally, the review emphasizes the increasing need for AI literacy and pedagogical guidance in writing instruction. By reviewing these studies, the section presents the theoretical and empirical foundations and identifies the specific gaps that the study aims to address in the context of an English writing course in Vietnam.

### 2.1. AI-assisted writing in EFL contexts

The rapid development of generative AI has significantly affected technology-enhanced language learning. Tools such as Grammarly, ChatGPT, and QuillBot are now favored by EFL learners for supporting idea development and checking language accuracy. Research indicates that AI-mediated feedback can improve both writing quality and learner engagement, particularly when it is instant and personalized [1]. In addition to linguistic support, these tools may reduce writing anxiety in the writing process. Studies examining students' experiences with generative AI also report generally positive attitudes towards AI-supported writing. Learners

frequently highlight benefits in terms of idea generation and vocabulary development [3]. Moreover, AI tools provide students with accessible feedback after class, which may support students' autonomy and continuous language development [6]. Taken together, these findings suggest that AI tools are increasingly integrated into EFL writing practices rather than functioning merely as optional technological aids.

## 2.2. Writing process with AI

The present study draws on the process writing theory of Flower & Hayes [7], which involves planning, drafting, and revising. This perspective has been widely used to examine how learners develop written texts and how instructional support, to some extent, can enhance students' writing. Within digitally mediated learning environments, technological tools have gradually become a part of this process.

Previous research on digital writing tools suggests that learners often use technological support at different stages of the writing process. During the pre-writing stage, tools may facilitate brainstorming and idea organization; during drafting, they may support lexical and syntactic choices; and during revision, they are frequently used for grammar correction and cohesion improvement [8]. With the emergence of generative AI, these functions seem to be expanding. Rather than editing tools, AI tools are increasingly incorporated in multiple phases of writing development. Related research on machine translation also provides insight into how learners integrate technological tools into writing practices. For example, students often rely on systems such as Google Translate to translate between their first and target languages during drafting [9]. This pattern suggests that the use of AI-supported tools is closely linked with learners' language proficiency, writing strategies and perceived demand for linguistic support. More recent research on AI-assisted writing suggests that generative AI tools can support learners throughout the writing process. Students may use AI to generate ideas in the planning stage, gain linguistic support during drafting, and polish their texts during revision [2, 10]. These findings highlight that AI use in writing is increasingly process-oriented, meaning AI tools are integrated across multiple stages of composing rather than used only for final editing.

From this perspective, examining AI use across writing stages provides important insights into how learners use AI tools in writing tasks. The stage at which AI is used may

influence not only how students develop their texts but also how they perceive the benefits and limitations of AI-assisted writing. Therefore, understanding AI integration within the writing process represents an important direction for research on AI-supported language learning.

## 2.3. Patterns and purposes of AI tool use

As AI technologies become more accessible, research has begun to examine how students actually use these tools in academic writing. Studies show that university students commonly use AI applications for grammar checking, paraphrasing, translation, and idea generation [11]. In many cases, students report using AI not only to improve language accuracy but also to complete writing tasks more efficiently [12]. Evidence from Southeast Asian contexts indicates similar trends. Meniado et al. [3], for example, found that EFL learners in Vietnam and Thailand frequently used generative AI tools across different writing assignments, particularly for content development and revision. While these practices demonstrate the growing presence of AI in students' writing routines, the educational implications may vary depending on how the tools are used. Some forms of AI assistance may support language learning, whereas extensive reliance on AI-generated content could potentially reduce learners' cognitive engagement in writing tasks. Understanding these patterns is therefore essential for evaluating the pedagogical role of AI in writing instruction.

## 2.4. Perceived benefits of AI-assisted writing

Research consistently reports several perceived advantages associated with AI-supported writing. The most frequently mentioned benefits are perceived improvements in terms of grammatical accuracy, vocabulary range, coherence, and writing flow [2, 11]. The availability of immediate feedback also appears to encourage students to revise their texts more actively and effectively. From a pedagogical perspective, AI tools may support learner-centered approaches to writing instruction. If used appropriately, AI-generated feedback can help students monitor their progress and develop greater awareness of their writing strategies [10].

## 2.5. Challenges, risks, and ethical concerns

Despite the potential advantages, researchers have also raised concerns about the increasing use of AI in academic writing. One commonly discussed issue is that excessive reliance on AI tools may hinder learners' ability to generate and evaluate their own ideas [2]. Empirical studies suggest that while AI can support aspects of self-

regulated writing, overdependence may diminish students' independent writing skills [13]. Another concern relates to the reliability of AI-generated content. AI outputs may occasionally contain factual mistakes, inappropriate word choices, or culturally inappropriate expressions, which can adversely affect the quality of students' writing if such outputs are accepted uncritically [12]. In addition, the use of AI raises concerns related to academic integrity, authorship, and transparency in writing practices. Students often report uncertainty regarding acceptable levels of AI assistance and how such assistance should be controlled in academic work [14]. Taken together, these issues highlight the significance of establishing clearer guidelines.

### 2.6. Pedagogical implications

Given the opportunities and challenges associated with AI-assisted writing, recent studies emphasize the significance of AI literacy in language education. AI literacy generally refers to learners' ability to use AI tools effectively, to evaluate AI-generated information critically, and to apply ethical principles when incorporating AI support into academic work [12]. Within EFL classrooms, teachers play a crucial role in shaping how students engage with AI technologies. Research indicates that students expect clear guidance on how to use AI tools properly in writing assignments and assessment tasks [3]. Without such guidance, students may either heavily rely on AI or avoid using it altogether, which may hinder the educational potential of these tools. Integrating AI literacy into writing instructions is hence considered a priority in many educational settings.

### 2.7. Research Gap and Contribution of the Present Study

Although research on AI-assisted writing has expanded considerably in recent years, several important gaps remain. First, much of the existing research focuses on students' general perceptions or attitudes toward AI tools rather than on how AI is concretely integrated into specific instructional contexts or writing course structures [3, 4]. Studies were implemented in defined course settings, where curriculum goals, assignment sequences, and assessment criteria shape AI use behavior, remain comparatively scarce. Second, relatively few studies have specifically examined AI-assisted writing among first-year EFL learners. This population is pedagogically distinct because students are simultaneously acquiring foundational academic writing rules and facing a demand to use emerging AI tools. Such

dual demand may produce different patterns of tool use and dependency than those observed in more advanced learners [5, 13]. Malik et al. [11] and Amani and Bisriyah [13] both note that self-regulation capacities, which mediate effective use of AI tools, tend to be less developed among novice writers, suggesting that findings from studies of higher-level students may not be generalizable to first-year students. Third, while process writing theory has emphasized the importance of examining writing as a staged, recursive activity [7], relatively few empirical studies have adopted a stage-specific lens to investigate when and how AI tools are used across the planning, drafting and revision phases [2, 10]. Most existing work treats AI use as a variable, collapsing stage-based distinctions that may carry important pedagogical implications. Fourth, studies that simultaneously examine the perceived benefits and potential risks of AI-assisted writing, including dependency and ethical concerns, within a single empirical framework are limited [12, 14]. Addressing this gap is necessary to produce a more balanced and ecologically valid account of AI's role in the development of EFL writing. The present study is designed to address these gaps by investigating AI use patterns, stage-based AI integration, and their relationships with writing improvement, dependency, and concerns among first-year EFL students enrolled in a specific writing course at a Vietnamese public university.

### 2.8. Conceptual model

Building on the reviewed literature, this study proposes a framework for understanding AI-assisted writing in an EFL context. The present study defines AI-assisted writing use as a set of usage patterns, including frequency and purpose, that shape students' use of AI tools across different stages of the writing process. In this framework, usage patterns represent students' overall engagement with AI tools, while AI use across writing stages reflects the degree to which these tools are integrated into the planning, drafting, and revising stages of writing. Drawing on process writing theory, the study further examines how AI use across writing stages is associated with students' perceived improvement in writing, as well as potential challenges related to AI-assisted writing, including dependence on AI tools and concerns about AI use. By incorporating both positive outcomes and potential risks, the framework offers a deeper insight into how AI tools influence students' writing experiences. Through this framework, the study

contributes to the emerging literature on AI-assisted language learning by linking patterns of AI use, process-level integration of AI, and learning outcomes in an English writing course for EFL freshmen. In the study, AI use across writing stages is treated as a central variable linking overall AI use patterns to students' perceived learning outcomes and challenges. Figure 1 illustrates the study's conceptual model.

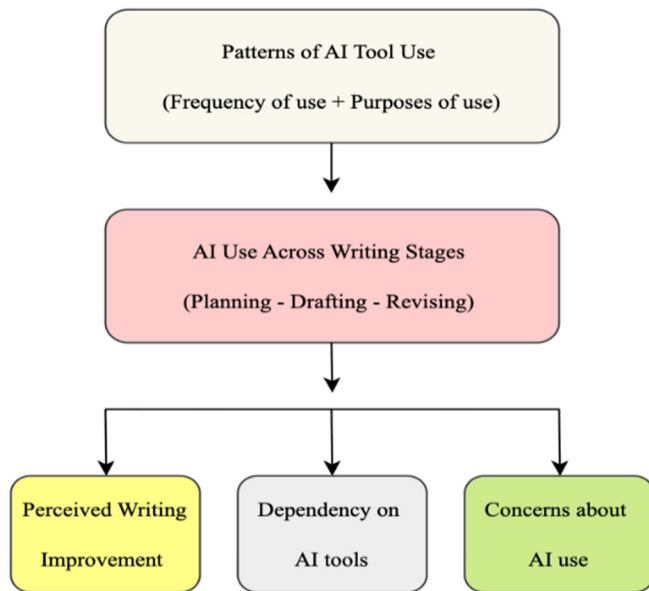


Figure 1. Conceptual Model of AI-Assisted Writing Use

**2.9. Hypothesis development**

AI use patterns, as reflected in their frequency and purposes, indicate learners' engagement with AI tools. Previous studies show that EFL learners use AI for idea generation, grammar support, and revision [3, 11, 12]. From a process-writing perspective, writing involves planning, drafting, and revising [7], and AI tools can support these stages [2, 10]. Therefore, greater AI use is expected to promote broader stage-based integration. At the same time, such integration may enhance perceived writing improvement but also increase dependency and concerns due to overreliance and awareness of AI limitations [2, 13, 14].

*H1: AI use patterns positively predict AI use across writing stages.*

*H2: AI use across writing stages positively predicts perceived writing improvement.*

*H3: AI use across writing stages positively predicts dependency on AI tools.*

*H4: AI use across writing stages positively predicts concerns about AI use.*

**3. METHODOLOGY**

**3.1. Research context and participants**

This study was conducted in the context of an English writing course at a public university in Vietnam. The course, English Writing Skills 1, is designed for first-year students majoring in English language at Hanoi University of Industry (HaUI). It aims to develop students' foundational academic writing skills, including sentence construction and paragraph development.

In HaUI, English Writing Skills 1 is a compulsory first-semester course. The course runs over 10 instructional weeks and meets for four 50-minute sessions per week. The curriculum targets CEFR A2 writing proficiency and focuses on paragraph-level writing tasks, including descriptive and process paragraphs. Assessment comprises weekly writing assignments and a mid-term and end-of-term paragraph writing test. This course was selected as the research site for three reasons. First, it represents students' initial formal exposure to structured academic writing in English, making it a theoretically appropriate context for examining how AI tools are adopted at the earliest stage of academic writing development. Second, first-year students at HaUI are known to enter the programme with varying levels of English proficiency and uneven prior experience with digital learning tools. Third, the absence of any formal institutional policy on AI use during the study period meant that students' engagement with AI tools was shaped primarily by individual choice and peer norms rather than by top-down regulation, thereby offering a naturalistic approach to AI adoption behavior.

In the study, 166 participants took part. Their participation was voluntary. They were all informed that their responses would be used solely for research purposes.

**3.2. Research instrument**

Data were collected using a structured questionnaire designed to examine students' patterns of AI tool use and their perceptions of AI-assisted writing. The questionnaire items were adapted and conceptually derived from previous studies [2, 10, 11, 12], with theoretical grounding in the process writing framework of Flower and Hayes [7]. The survey consisted of several sections measuring the main constructs.

- *AI Use Frequency:* AI use frequency measured how often students used AI tools in their writing activities.

- *AI Use Purposes:* AI use purposes examined the specific ways students used AI tools during writing tasks.

- *AI Use Across Writing Stages:* AI use across writing stages measured the extent to which students integrated AI tools into different stages of the writing process.

- *Perceived Writing Improvement:* Perceived writing improvement measured students' perceptions of how AI tools influenced their writing ability.

- *Dependency on AI Tools:* Dependency on AI tools assessed the extent to which students relied on AI assistance during writing tasks.

- *Concerns About AI Use:* Concerns about AI use measured students' awareness of potential risks associated with AI-assisted writing.

All 43 questionnaire items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

### 3.3. Data collection procedure

The questionnaire was administered at the 9<sup>th</sup> Week after students had completed several writing assignments in the English Writing Skills 1 course (10 weeks). At this stage, students had already gained experience using AI tools in their writing. The survey was distributed online using Google Forms, and students were invited to participate voluntarily with no identifying information collected to ensure anonymity. A total of 166 valid responses were obtained and analyzed.

### 3.4. Data analysis

The collected data were analyzed using the R statistical software environment. Several analytical procedures were performed to examine the research questions and test the four proposed hypotheses. First, descriptive statistics were calculated to summarize students' patterns of AI tool use, including the frequency and purposes of AI use and the extent to which AI tools were integrated into different writing stages. Second, reliability analysis was conducted to examine the internal consistency of the measurement scales. Cronbach's alpha coefficients were calculated for each construct to verify the reliability of the survey instrument. Third, correlation analysis was conducted to explore the relationships among the main variables in the research model, including AI use patterns, AI use across writing stages, perceived writing improvement, AI dependency and AI concerns. Finally, regression analyses were implemented to test the proposed hypotheses and examine how different dimensions of AI use predicted perceived writing improvement, dependency on AI tools as well as concerns about AI use. These analytical procedures

facilitated the examination of both the patterns of AI-assisted writing use and their relationships with students' perceived learning outcomes and potential challenges.

## 4. RESULTS

### 4.1. Participant profile

A total of 166 first-year EFL students enrolled in the English Writing Skills 1 course participated in the survey. Table 1 summarizes the demographic distribution of the participants.

Table 1. Participant Demographics (N = 166)

Variable	Category	N	%
Gender	Female	114	68.7
	Male	52	31.3
<b>Total</b>		<b>166</b>	<b>100</b>

As shown in Table 1, female students accounted for 68.7% whereas male students represented 31.3% of the participants. This distribution reflects the gender ratio typically observed in English language programs at Vietnamese universities. Participants were also asked to indicate how frequently they used AI tools when completing writing assignments. The distribution of responses is presented in Table 2.

Table 2. Frequency of AI Tool Use in Writing Tasks

Frequency	n	%
Very often	13	7.8
Often	81	48.8
Sometimes	66	39.8
Rarely	6	3.6
<b>Total</b>	<b>166</b>	<b>100</b>

The results indicate that AI tools are widely incorporated into students' writing activities. Nearly half of the respondents (48.8%) reported using AI tools often when completing writing assignments in comparison with 7.8% of respondents indicated very frequent use. In contrast, only a small proportion of students (3.6%) reported rarely using AI tools. Overall, these results suggest that generative AI technologies have become a regular part of students' writing practices rather than optional supplementary resources. Students reported using several AI-supported applications, including ChatGPT, Google Translate, Grammarly, Gemini and QuillBot. Among these tools, ChatGPT appeared most frequently, suggesting that conversational generative AI systems play a pivotal role in students' AI-assisted writing activities. Taken together, these findings indicate that AI-

assisted writing is already embedded in students' everyday academic practices, providing a contextual basis for examining how AI tools are integrated into different stages of the writing process.

**4.2. Descriptive Statistics and Correlation Analysis**

**4.2.1. Reliability Analysis**

Table 3 presents the Cronbach's Alpha values for each measurement construct used in this study. The results indicate that all scales demonstrate adequate to excellent internal consistency. Specifically, the AI Frequency (B1) scale, comprising three items, had a Cronbach's Alpha of 0.74, indicating acceptable reliability. The AI Purposes (B2) scale, with eight items, showed high reliability ( $\alpha = 0.89$ ), which is considered excellent. The AI Use Across Writing Stages (B3) scale, containing six items, had a Cronbach's Alpha of 0.86, reflecting good internal consistency. The AI Dependency (B4) scale attained a reliability of 0.71, indicating acceptable consistency. The Writing Improvement (C) scale, with eleven items, exhibited an excellent reliability coefficient of 0.91, while the AI Concerns (D) scale, consisting of ten items, demonstrated good reliability with a Cronbach's Alpha of 0.87. Overall, these values confirm the reliability and appropriateness of the measurement instruments for further statistical analysis.

Table 3. Cronbach's Alpha Reliability Results for Measurement Constructs

Construct	Items	Cronbach's Alpha	Interpretation
AI Frequency (B1)	3	0.74	Acceptable
AI Purposes (B2)	8	0.89	Excellent
AI Use Across Writing Stages (B3)	6	0.86	Good
AI Dependency (B4)	5	0.71	Acceptable
Writing Improvement (C)	11	0.91	Excellent
AI Concerns (D)	10	0.87	Good

**4.2.2. Correlation Analysis**

To further explore patterns of AI tool use and the relationships among the study variables, descriptive statistics and Pearson correlation analyses were conducted. Table 4 presents the means, standard deviations and correlation coefficients among the main constructs included in the research model.

The descriptive statistics indicate that students reported moderate to relatively high engagement with AI tools across the measured constructs. Among the variables, perceived writing improvement recorded the

highest mean score ( $M = 3.72, SD = 0.48$ ), suggesting that students generally perceived AI tools as beneficial for improving their writing ability. Similarly, AI use purposes ( $M = 3.62$ ) and AI concerns ( $M = 3.62$ ) also showed relatively high mean scores, indicating that students actively used AI tools for multiple writing-related functions while simultaneously recognizing potential risks associated with AI-assisted writing. The correlation analysis revealed several statistically significant relationships among the constructs. AI use across writing stages showed a moderate positive correlation with perceived writing improvement ( $r = 0.35, p < 0.01$ ), suggesting that students who integrate AI tools into multiple stages of the writing process tend to perceive greater improvements in their writing ability. Notably, AI use across writing stages showed the strongest association with AI dependency ( $r = 0.53, p < 0.01$ ), indicating that students who rely on AI tools throughout the writing process are more likely to report greater dependence on these technologies. In addition, AI use across writing stages was moderately correlated with AI concerns ( $r = 0.42, p < 0.01$ ), indicating that students who interact more extensively with AI tools may become more aware of potential issues related to the reliability, accuracy and ethical use of AI-generated content. Overall, these correlations provide preliminary empirical support for the proposed conceptual framework and justify further regression analyses to test the study hypotheses.

Table 4. Means, Standard Deviations, and Correlations Among Study Variables

Variable	Mean	SD	1	2	3	4	5	6
1. AI Frequency	3.37	0.83	—					
2. AI Purposes	3.62	0.57	0.29**	—				
3. AI Use Across Writing Stages	3.33	0.60	0.34**	0.41**	—			
4. Writing Improvement	3.72	0.48	0.39**	0.50**	0.35**	—		
5. AI Dependency	3.35	0.58	0.21**	0.26**	0.53**	0.28**	—	
6. AI Concerns	3.62	0.53	0.18*	0.22**	0.42**	0.24**	0.37**	—

Note: \* $p < 0.05$ , \*\* $p < 0.01$ .

**4.3. AI Use Patterns at the Item Level**

To provide a more detailed understanding of AI use patterns, item-level descriptive statistics for AI use purposes and writing stages are presented in Table 5.

Table 5. Item-Level Descriptive Statistics for AI Use Purposes and Writing Stages (N = 166)

AI Use Purposes			
Item	Description	M	SD
B2_1	Grammar and spelling	3.74	0.86
B2_2	Translation	3.68	0.90
B2_3	Idea generation	3.85	0.82
B2_4	Outline creation	3.41	0.88
B2_5	Sentence improvement	3.70	0.84
B2_6	Vocabulary learning	3.59	0.87
B2_7	Coherence checking	3.48	0.89
B2_8	Plagiarism checking	3.21	0.92

AI Use Across Writing Stages			
Item	Description	M	SD
B3_1	Before writing	3.56	0.83
B3_2	During writing	3.61	0.79
B3_3	After writing	3.49	0.85
B3_4	Editing AI-generated text	3.32	0.88
B3_5	AI used across all stages	3.21	0.91
B3_6	Greater use in early stages	3.02	0.94

Item-level analysis revealed that AI tools were used for a range of purposes and at various stages of writing. At the purposes level, students reported relatively higher use of AI for idea generation (M = 3.85), grammar correction (M = 3.74), and sentence improvement (M = 3.70). Lower levels were observed for plagiarism checking (M = 3.21) and structural support such as outlining and coherence checking. At the writing stage level, AI use was highest during writing (M = 3.61), followed by pre-writing (M = 3.56) and post-writing (M = 3.49). Lower levels were observed for editing AI-generated text (M = 3.32) and stage-specific use patterns. Overall, these findings indicate that AI use spans multiple purposes and stages, with relatively stronger engagement in idea generation and drafting-related activities.

#### 4.4. Regression analysis

To examine the predictive relationships proposed in the conceptual model, a series of regression analyses was conducted. These analyses tested whether patterns of AI use predict AI integration across writing stages, and whether AI use across writing stages predicts writing improvement, AI dependency and AI-related concerns.

##### 4.4.1. Predicting AI Use Across Writing Stages

Hypothesis 1 proposed that patterns of AI tool use (frequency and purposes of use) positively predict AI use

across writing stages. A multiple regression analysis was carried out with AI use across writing stages as the dependent variable and AI frequency and AI purposes as predictors.

Table 6. Regression Results Predicting AI Use Across Writing Stages

Predictor	B	SE	$\beta$
AI Frequency	0.21**	(0.06)	0.24
AI Purposes	0.39***	(0.08)	0.36
Constant	—	—	—
Model Statistics			
R <sup>2</sup>	0.28		
Adjusted R <sup>2</sup>	0.27		
F	32.41***		

Note: N = 166. Standard errors are in parentheses, \*\*p < 0.01; \*\*\*p < 0.001.

The regression model was statistically significant, explaining 28% of the variance in AI use across writing stages (R<sup>2</sup> = 0.28). Both predictors significantly contributed to the model. AI use purposes emerged as the stronger predictor ( $\beta$  = 0.36), indicating that students who used AI tools for a wider range of writing-related purposes were more likely to integrate these tools into multiple stages of the writing process. AI frequency also showed a significant but comparatively smaller effect ( $\beta$  = 0.24). These results support Hypothesis 1, suggesting that both the frequency and purposes of AI use contribute to deeper integration of AI tools within the writing process.

##### 4.4.2. Predicting Perceived Writing Improvement

Hypothesis 2 proposed that AI use across writing stages positively predicts perceived writing improvement. A regression analysis was conducted with perceived writing improvement as the dependent variable.

Table 7. Regression Results Predicting Perceived Writing Improvement

Predictor	B	SE	$\beta$
AI Use Across Writing Stages	0.31***	(0.07)	0.35
Model Statistics			
R <sup>2</sup>	0.12		
Adjusted R <sup>2</sup>	0.11		
F	21.42***		

Note: N = 166. Standard errors are in parentheses, \*\*\*p < 0.001.

The results indicate that AI use across writing stages significantly predicts perceived writing improvement ( $\beta$  = 0.35, p < 0.001). The model explains 12% of the variance in perceived writing improvement (Table 7). This finding suggests that students who incorporate AI tools

throughout multiple phases of the writing process, including planning, drafting, and revision, tend to perceive greater improvements in their writing ability. Thus, Hypothesis 2 is supported, highlighting the potential role of process-oriented AI integration in enhancing students' perceptions of writing development.

**4.4.3. Predicting AI dependency**

Hypothesis 3 proposed that AI use across writing stages positively predicts dependency on AI tools.

Table 8. Regression Results Predicting AI Dependency

Predictor	B	SE	$\beta$
AI Use Across Writing Stages	0.52***	(0.07)	0.53
<b>Model Statistics</b>			
R <sup>2</sup>	0.28		
Adjusted R <sup>2</sup>	0.28		
F	62.12***		

Note: N = 166. Standard errors are in parentheses, \*\*\* $p < 0.001$ .

The analysis shows that AI use across writing stages is a strong predictor of AI dependency ( $\beta = 0.53$ ). The model explains 28% of the variance in AI dependency, indicating that students who integrate AI tools more extensively throughout the writing process are more likely to develop a reliance on these tools. Therefore, Hypothesis 3 is supported. This finding suggests that although AI tools may support writing development, extensive integration across writing stages may also increase students' reliance on automated assistance.

**4.4.4. Predicting AI concerns**

Hypothesis 4 proposed that AI use across writing stages positively predicts concerns about AI use.

Table 9. Regression results predicting ai concerns

Predictor	B	SE	$\beta$
AI Use Across Writing Stages	0.38***	(0.06)	0.42
<b>Model Statistics</b>			
R <sup>2</sup>	0.18		
Adjusted R <sup>2</sup>	0.17		
F	36.12***		

Note: N = 166. Standard errors are in parentheses, \*\*\* $p < 0.001$ .

The results show that AI use across writing stages significantly predicts concerns about AI use ( $\beta = 0.42$ ,  $p < 0.001$ ). The model explains 18% of the variance in AI concerns. This finding suggests that students who interact more extensively with AI tools may become more

aware of potential risks associated with AI-assisted writing, including issues of accuracy, reliability, and the responsible use of AI-generated content (Table 9). Accordingly, Hypothesis 4 is supported, indicating that increased AI engagement may simultaneously raise students' awareness of both the merits and demerits of AI-assisted writing.

**5. DISCUSSION**

**5.1. AI use patterns as process-oriented engagement**

The findings confirm that AI tools are widely integrated into students' writing practices, particularly for idea generation and language support. It is consistent with previous studies, which report that EFL learners frequently use AI tools for vocabulary development, grammar correction, and idea generation [3, 11]. Similarly, students rely on generative AI to support both language accuracy and task completion, suggesting that AI has become a regular part of academic writing rather than merely an optional supplementary resource [12].

However, the results also show that AI use is not evenly distributed, with relatively higher engagement during drafting compared to revision. This finding can be interpreted in relation to process writing theory [7], which conceptualizes drafting as a cognitively demanding stage involving simultaneous idea development and language production. Consistent with Stevenson and Phakiti, learners tend to depend more on technological assistance when confronting higher cognitive demands [8].

The relatively lower use of AI in revision suggests that students may not fully utilize it for higher-level writing processes such as critical evaluation and restructuring. This observation does not contradict previous studies [2, 10], which indicate that AI can support revision, but rather highlights that this potential has not yet been fully realized in classroom practice. Therefore, the present findings extend the literature by highlighting a gap between the capabilities of AI tools and their actual application throughout the writing process.

**5.2. AI use across writing stages and perceived writing improvement**

The positive association between AI use across writing stages and perceived writing improvement aligns with prior research indicating that AI-assisted feedback can facilitate writing development [1, 2]. AI tools provide instant and individualized feedback, which helps learners improve aspects such as grammar, vocabulary, and coherence. The present findings reinforce this

perspective by showing that students who integrate AI into multiple stages of writing tend to perceive greater improvements.

At the same time, the model's relatively modest explanatory power suggests that AI use is only one of several factors influencing writing development. This observation aligns with Dwivedi et al., who emphasize that while AI provides useful feedback, its effectiveness depends on how learners engage with that feedback [10]. In this sense, AI-assisted writing should be understood as part of a broader learning process rather than a standalone solution.

Moreover, the use of perceived writing improvement as the outcome variable requires cautious interpretation. Previous research has shown that AI tools can enhance learner motivation and confidence, which may influence how students evaluate their own progress [6]. Therefore, while the findings indicate positive perceptions of improvement, they do not necessarily confirm actual gains in writing quality. This reinforces the need for future research to incorporate objective measures of writing performance.

### **5.3. AI use across writing stages and dependency on AI tools**

The findings show that AI use across writing stages is strongly associated with dependency on AI tools, supporting concerns raised in previous studies regarding overreliance [2, 13]. Excessive dependence on AI may reduce learners' engagement in independent writing processes and limit opportunities for developing critical thinking skills. This study contributes to this discussion by showing that dependency is particularly associated with the extent to which AI is integrated across writing stages. In other words, when AI tools are used throughout the writing process rather than at a single stage, learners are more likely to rely on them. This finding is consistent with Chan and Hu, who report that students often depend on AI not only for language correction but also for idea generation [12].

However, it is crucial to interpret this dependency within the context of language learning development. As suggested in process-oriented approaches to writing [7], external support can play a facilitative role in the early stages of skill development. Therefore, while dependency may raise concerns, it may also reflect learners' attempts to cope with linguistic challenges in an EFL context. This suggests that the vital issue is not the presence of AI use itself, but how it is managed within educational contexts.

### **5.4. AI use and concerns about AI-assisted writing**

The results indicate that greater AI use across writing stages is associated with higher levels of concern about AI-assisted writing. This finding is consistent with previous research highlighting students' awareness of issues such as the reliability of AI-generated content, potential inaccuracies and uncertainty regarding appropriate use [12, 14].

Rather than indicate negative attitudes, this pattern may reflect increased awareness resulting from more frequent interaction with AI tools. As students use AI more extensively, they may encounter its limitations and become more cautious about its outputs. This interpretation aligns with the concept of AI literacy, which emphasizes the importance of critically evaluating AI-generated information. Thus, the findings suggest that AI use may simultaneously increase both reliance and awareness. This dual effect highlights the complexity of AI-assisted writing and suggests that students' engagement with AI is not purely passive but involves critical reflection.

### **5.5. Pedagogical implications for AI-supported writing instruction**

The findings have several implications for writing instruction in EFL contexts. First, the stage-specific patterns of AI use suggest that teachers should consider how AI is integrated across different phases of the writing process. As discussed previously, writing involves planning, drafting, and revising [7], and AI tools may play different roles at each stage. Second, the association between AI use and dependency highlights the need for instructional strategies that promote balanced use of AI tools. Consistent with concerns raised in previous research [13], students should be trained to use AI as a support tool rather than a substitute for their own writing efforts. Finally, the emergence of AI-related concerns among students reinforces the importance of AI literacy in writing instruction. In line with the previous findings, learners need clear guidance on how to evaluate AI outputs critically and utilize these tools responsibly in academic contexts [3, 12]. Overall, the findings suggest that effective integration of AI in writing instruction requires a process-oriented and thoroughly guided approach, in which AI is used to support learning while maintaining students' active engagement in the writing process.

## **6. CONCLUSION**

This study investigated patterns of AI-assisted writing use among Vietnamese EFL freshmen and examined how

such usage relates to perceived writing improvement, dependency, and concerns. The findings indicate that AI tools are widely used across multiple writing purposes and stages, with relatively higher engagement in idea generation and drafting-related activities. These results suggest that AI-assisted writing is not limited to surface-level editing but is increasingly integrated within the broader writing process. The study further demonstrates that AI use across writing stages is positively associated with perceived writing improvement, supporting the view that AI tools can provide meaningful support for language development. At the same time, the findings reveal that greater integration of AI is also associated with higher levels of dependency and increased awareness of AI-related concerns. This highlights the dual role of AI in writing instruction, functioning as both a supportive resource and a potential source of pedagogical challenges. Pedagogically, the findings suggest that the key issue is not whether AI tools should be used, but how they should be integrated into writing instruction. A process-oriented approach to AI use, combined with clear guidance on critical evaluation and ethical use, may help students benefit from AI support while maintaining active engagement in the writing process and developing independent writing skills. However, several limitations should be acknowledged. First, the study relies on self-reported data, particularly for perceived writing improvement, which may not fully reflect actual writing performance. Second, the study is conducted within a single institutional context, which may limit the generalizability of the findings. Future research should employ mixed-method approaches, including textual analysis and experimental designs, to examine how AI use affects actual writing performance.

## REFERENCES

- [1]. Mekheimer M., "Generative AI-assisted feedback and EFL writing: a study on proficiency, revision frequency and writing quality," *Discover Education*, 4(1), 170, 2025. <https://doi.org/10.1007/s44217-025-00602-7>.
- [2]. Teng M. F., "ChatGPT is the companion, not enemies: EFL learners' perceptions and experiences in using ChatGPT for feedback in writing," *Computers and Education: Artificial Intelligence*, 7, 100270, 2024. <https://doi.org/10.1016/j.caeai.2024.100270>.
- [3]. Meniado J. C., Do T.T.H, Panyadilokpong N., Lertkomolwit P., "Using ChatGPT for second language writing: Experiences and perceptions of EFL learners in Thailand and Vietnam," *Computers and Education: Artificial Intelligence*, 7, 100313, 2024. <https://doi.org/10.1016/j.caeai.2024.100313>.
- [4]. Nguyen T.X. H., Hoang T. H. V., Vuong K. N., Nguyen T. T., "Enhancing writing skills through AI-powered tools: Perceived benefits and challenges among Vietnamese EFL students," *Discover Education*, 4(1), 472, 2025. <https://doi.org/10.1007/s44217-025-00905-9>.
- [5]. Lam K. N., Nguyen. T. M. H., Luong V. N. Q., "Leveraging AI for writing instruction in EFL Classrooms: Opportunities and challenges," *Educational Process International Journal*, 15(1), e2025158, 2025. <https://doi.org/10.22521/edupij.2025.15.158>.
- [6]. Song C., Song Y., "Enhancing academic writing skills and motivation: assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students," *Frontiers in Psychology*, 14, 1260843, 2023. <https://doi.org/10.3389/fpsyg.2023.1260843>.
- [7]. Flower L., Hayes J. R., "A cognitive process theory of writing," *College Composition and Communication*, 32(4), 365-387, 1981. <https://doi.org/10.2307/356600>.
- [8]. Stevenson M., Phakiti A., "The effects of computer-generated feedback on the quality of writing," *Assessing Writing*, 19, 51-65, 2014. <https://doi.org/10.1016/j.asw.2013.11.007>.
- [9]. Cancino M., Panes J., "The impact of Google Translate on L2 writing quality measures: Evidence from Chilean EFL high school learners," *System*, 98, 102464, 2021. <https://doi.org/10.1016/j.system.2021.102464>.
- [10]. Dwivedi Y. K., et al., "Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy," *International Journal of Information Management*, 71, 102642, 2023. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>.
- [11]. Malik A. R., Pratiwi Y., Andajani K., Numertayasa I. W., Suharti S., Darwis A., Marzuki, "Exploring Artificial Intelligence in academic essay: Higher Education Student's Perspectives," *International Journal of Educational Research Open*, 5, 100296, 2023. <https://doi.org/10.1016/j.ijedro.2023.100296>.
- [12]. Chan C. K. Y., Hu W., "Students' voices on generative AI: Perceptions, benefits, and challenges in higher education," *International Journal of Educational Technology in Higher Education*, 20(1), 2023. <https://doi.org/10.1186/s41239-023-00411-8>.
- [13]. Amani N., Bisriyah M., "University students' perceptions of AI-assisted writing tools in supporting self-regulated writing practices," *Indonesian Journal of English Language. Teaching and Applied Linguistics*, 10, 91-107, 2025. <https://doi.org/10.21093/ijeltal.v10i1.1942>.
- [14]. Ateriya N., Sonwani N. S., Thakur K. S., Kumar A., Verma S. K., "Exploring the ethical landscape of AI in academic writing," *Egyptian Journal of Forensic Sciences*, 15(1), 36, 2025. <https://doi.org/10.1186/s41935-025-00453-1>.

## THÔNG TIN TÁC GIẢ

**Nguyễn Thị Lan**

Trường Đại học Công nghiệp Hà Nội