ISSN 2773-9368 (Online)
Rangsit Journal of Educational Studies
Vol.13, No.1, pp.89-110, January-June 2026

The Effectiveness of AI-based Teacher Feedback in Enhancing Textual Coherence in EFL Writing

Supong Tangkiengsirisin

Language Institute, Thammasat University, Thailand

*Corresponding author, E-mail: supong.t@litu.tu.ac.th

Received 2026-04-19; Revised 2026-05-20; Accepted 2026-05-26;
Published online: 2025-05-29

Abstract

Academic writing remains a challenge for Thai university students, particularly in achieving textual coherence beyond surface-level grammar. This study investigates the effectiveness of AI-assisted teacher feedback—leveraging generative models like ChatGPT and Gemini—in enhancing the use of cohesive devices and thematic progression patterns among Thai graduate students. Utilizing a quasi-experimental, one-group pre-test/post-test design, the research involved 23 business graduate students (A2–B1 proficiency) enrolled in a remedial English course. Participants produced expository cause-effect paragraphs and received directive, AI-informed teacher feedback through Google Classroom. Data were analyzed using paired-sample *t*-tests and semi-structured interviews to triangulate writing performance with student perceptions. Quantitative results revealed a statistically significant improvement in overall textual coherence ($t = 26.72$, $p < 0.05$), with specific gains in the mastery of Theme-Rheme structures and a more diverse repertoire of cohesive ties. Qualitative findings indicated that students perceived the feedback as a vital cognitive guidance that fostered metalinguistic awareness and facilitated a smoother information flow. The study concludes that while AI provides consistent, systematic data for feedback, its integration with Systemic Functional Linguistics (SFL) frameworks allows students to transition from incoherent prose to unified academic discourse. These findings imply that a hybrid pedagogical approach—combining AI efficiency with explicit thematic instruction—can significantly promote textual coherence in L2 writing. This study contributes original value by bridging the gap between automated feedback technology and macro-structural discourse theories in an EAP context.

Keywords: *AI-assisted feedback, Textual coherence, Thematic progression, Cohesion, Academic writing*

1. Introduction

Writing is widely recognized as one of the most essential skills in language learning and academic communication. In English as a Foreign Language (EFL) contexts, writing enables learners to express ideas, construct arguments, and participate in academic and professional discourse (Hyland, 2003). Academic writing is usually a challenging task for university students in Thailand. Two main features of academic writing that students need to produce effectively are cohesion and coherence. Specifically, the ability to construct a

unified, logical, and flowing argument—known as textual coherence—remains one of the most persistent hurdles in second language (L2) writing.

Academic writing, particularly essay writing, is not merely a collection of grammatically correct sentences; it is a structured text where ideas must flow along together to guide the reader through complex ideas. However, many university students' essays often read as a series of disconnected ideas. This lack of "flow" is a cognitive and communicative barrier that obscures the writer's intent and diminishes the academic rigor of their work.

To understand the challenges facing university student writers, it is essential to distinguish between cohesion and coherence. *Cohesion* refers to the surface-level linguistic ties that connect sentences, such as pronouns, conjunctions, and transition signals (e.g., however, therefore), while *coherence* refers to the deeper semantic logic and the overall meaning of the text.

A common phenomenon found in student writing is the use of mechanical cohesion, where students simply fill their paragraphs with transitional expressions without truly linking the underlying ideas. As Halliday and Hasan (1976) established, cohesion is a necessary but insufficient condition for coherence. A student might use "moreover" to start a sentence, but if the subsequent idea does not actually build upon the previous one, the text remains incoherent despite the presence of cohesive markers.

Previous studies have shown that university students, particularly those in English for Academic Purposes (EAP) contexts, often rely on a limited range of cohesive devices and fail to manage the "information flow" of their paragraphs (Hinkel, 2004). This results in writing that feels "choppy", where the reader is forced to draw inferences about the relationships between ideas. Therefore, students should be taught how to use cohesive devices effectively, together with other coherence techniques.

A promising solution to these challenges lies in the application of Systemic Functional Linguistics (SFL), specifically the concept of *Thematic Progression*. This framework analyzes how information is packaged within a sentence through the "Theme" and the "Rheme." *Theme* refers to the starting point of the message; what the sentence is about (usually the "given" information). *Rheme* refers to the remainder of the message; what is being said about the Theme (the "new" information). Thematic progression describes patterns of how the Rheme of one sentence becomes the Theme of the next, or how a single Theme is maintained across several sentences to create a "thread" of continuity (Daneš, 1974). For university students, explicit instruction in these patterns provides a roadmap for sentence construction. Instead of guessing where to place information, students learn to position "old" information in the Theme position to ground the reader, and "new" information in the Rheme position to advance the argument. Belmonte and McCabe (1998) suggest that many student errors in coherence stem from "Theme leaps," where a student introduces a new Theme that has no clear connection to the previous discourse. By teaching thematic progression, writing instructors can provide students with a meta-linguistic tool to diagnose and fix their own "choppy" prose.

Additionally, integrating teacher feedback is a transformative process that bridges the gap between initial drafting and the production of a polished, cohesive academic

argument. According to Hyland and Hyland (2006), feedback serves as a critical social interaction that helps students negotiate the complexities of academic discourse. When learners actively engage with comments regarding logical transitions and structural alignment, they move beyond surface-level corrections to address deep-seated issues of textual coherence. This refinement ensures that the "thread" of the argument remains visible to the reader throughout the manuscript. Bitchener and Ferris (2012) emphasize that written corrective feedback is most effective when students treat it as a roadmap for global revision rather than a checklist for local errors. By synthesizing suggestions on paragraph unity and signposting, writers can better manage the "flow" of information, creating a more seamless transition between evidence and analysis. As noted by Sommers (1982), the feedback encourages students to see their work as a recursive process, where external perspectives highlight blind spots in logical progression. Ultimately, the successful integration of pedagogical critiques fosters a more sophisticated rhetorical structure, allowing the writer to command authority and clarity in their scholarly contributions.

In recent years, advances in artificial intelligence (AI) have introduced new approaches to writing instruction and feedback. AI writing tools can provide immediate and individualized feedback on grammar, vocabulary, organization, and coherence. Unlike traditional feedback methods, AI-based feedback systems offer rapid responses and continuous support during the writing process, potentially increasing learners' opportunities for revision and self-improvement (Yang et al., 2024). These technologies may support learners not only at the sentence level but also in improving discourse organization and textual coherence. Previous studies have reported positive effects of AI-assisted feedback on learners' writing performance, learner autonomy, and revision practices (Duan & Wang, 2026; Amelia & Handayani, 2025; Fan, 2023).

However, despite increasing interest in AI-assisted writing instruction, relatively limited research has specifically examined the effectiveness of AI feedback in improving textual coherence in EFL writing. Much of the existing literature focuses primarily on surface-level linguistic accuracy rather than discourse-level features, such as thematic progression, cohesion, and logical development of ideas. Furthermore, studies evaluating AI-generated feedback on coherence have revealed limitations, including overly general comments and insufficiently specific suggestions for discourse improvement (Su-Youn et al., 2023). In addition, relatively few studies have investigated textual coherence from the SFL perspectives, particularly through concepts, such as Theme–Rheme organization and thematic progression.

Given these gaps, this research article aims to investigate whether a dual-pronged approach—integrating cohesion and thematic progression instruction with written teacher feedback based on AI feedback (Gemini or ChatGPT) on coherence—can significantly improve the quality of Thai graduate students' writing expository compositions. By exploring the relationship between AI feedback and discourse-level writing improvement, this study may contribute to the current research on AI-assisted writing by integrating SFL-based discourse analysis into the evaluation of AI feedback effectiveness, as well as providing insights for EFL teachers, curriculum designers, and researchers regarding the potential use of AI tools to support coherence development and discourse organization in writing instruction. The main research questions intended to be answered in this study were:

RQ1. To what extent does the teacher feedback using AI enhance overall textual coherence in student L2 writing?

RQ2. To what extent does the teacher feedback using AI enhance the effective use of thematic progression and cohesive devices in student L2 writing?

RQ3. What are the students' perceptions on the teacher feedback using AI regarding their improvement in textual coherence?

2. Literature Review

This section provides the explanation on the key concepts regarding the related theories and the presentation of some recent previous studies.

2.1 Systemic Functional Linguistics (SFL) Framework

Systemic Functional Linguistics (SFL), developed by Halliday, views language as a social semiotic system through which meaning is constructed according to communicative purposes and social contexts (Halliday & Matthiessen, 2013). Unlike traditional linguistic approaches that primarily focus on grammatical structures, SFL emphasizes the functional use of language in context. It is proposed that language simultaneously performs three metafunctions, including ideational, interpersonal, and textual metafunctions. Among these, the textual metafunction is particularly relevant to writing studies, as it concerns how linguistic elements are organized into coherent and meaningful texts (Halliday & Hasan, 1976).

Within SFL, textual coherence is achieved through the organization of information and the relationships between clauses, sentences, and paragraphs. Textual coherence represents the connectedness of a text, transforming a disparate string of sentences into a unified communicative act. While coherence is often perceived as a mental representation formed by the reader, it is fundamentally supported by the linguistic infrastructure of cohesion and thematic progression. According to Halliday and Hasan (1976), cohesion provides the "texture" of a discourse through specific grammatical and lexical ties. These ties—such as reference, substitution, ellipsis, conjunction, and lexical reiteration—create semantic dependencies where the interpretation of one element relies on another. For instance, the use of a personal pronoun to refer back to a previously mentioned noun phrase ensures that the reader maintains a consistent track of participants throughout the discourse (Halliday & Hasan, 1976). Without these overt surface links, a text may appear fragmented, forcing the reader to work harder to infer the relationships between ideas.

Beyond individual cohesive ties, the internal organization of information at the clause level is governed by the Theme-Rheme structure. Halliday and Matthiessen (2013) define the Theme as the "point of departure" for the message—the information placed at the beginning of the clause—while the Rheme constitutes the remainder of the message where "new" information is typically delivered. Coherence is achieved when these elements are sequenced logically across multiple clauses, a process known as thematic progression. This progression can be described as the "skeleton of the plot," as it dictates how the "given" information in the Theme connects to the "new" information in the Rheme to facilitate a smooth flow of ideas.

There are certain patterns of thematic progression that writers may employ to maintain this flow. In linear progression, the Rheme of one clause becomes the Theme of the subsequent clause, creating a "zigzag" effect that moves the text forward. In constant progression, the same Theme is repeated across several clauses, which is often used in descriptive writing to keep the focus on a single subject. Finally, the split Rheme pattern occurs when a single Rheme introduces multiple pieces of information that are then picked up as Themes in separate following clauses (Eggins, 1994).

However, the mere presence of cohesive ties does not guarantee coherence. As noted by Arunsirot (2013), EFL writers often struggle with "empty Themes" or "brand new Themes" that fail to link back to the preceding context, resulting in a breakdown of logical flow. True textual coherence, therefore, is an interplay between the micro-level accuracy of cohesive markers and the macro-level strategic management of thematic development. When a writer successfully aligns these linguistic tools, the text becomes a "unified whole," allowing the reader to perceive its semantic representation without confusion (Enkvist, 1990).

Cohesion, closely related to coherence, is also a central concept within SFL. The study of cohesion in second language writing is primarily anchored in the seminal work of Halliday and Hasan (1976), who defined cohesion as the linguistic means through which a text achieves "texture" and unity. They argue that cohesion occurs when the interpretation of a discourse element depends on another, distinguishing a unified text from a random collection of sentences. This foundational framework was expanded by scholars like Grabe (1985) and Enkvist (1990), who described cohesion as overt surface links that signal semantic integrity. Subsequent research by Carrell (1982) and Bamburg (1984) further explored the complex relationship between cohesion and coherence across various language skills.

Halliday and Hasan's taxonomy identifies five distinct cohesive ties. The first, reference, utilizes items like pronouns or demonstratives that lack independent meaning. For example, personal reference uses "he" to point back to the man mentioned earlier, while demonstrative reference might use "this" to refer to an entire preceding statement. Substitution and ellipsis serve as abbreviating devices to reduce redundancy. Substitution replaces one item with another, such as using "one" instead of repeating the head noun, whereas ellipsis is the "substitution by zero," where a noun that is repeated is omitted entirely because it is understood from the context. While Halliday (1994) later grouped these together, they remain distinct in their mechanical application to text.

Lexical cohesion achieves unity through vocabulary selection rather than grammatical signals. This includes reiteration, such as using the synonym "work" for "job" or the superordinate "shopping mall" for "the Paragon," and collocation, which involves words that naturally co-occur, like "strong" and "tea." Finally, conjunction links ideas semantically through categories such as additive ("and"), adversative ("however"), causal ("so"), and temporal ("then"). Halliday's later work refined these into three functional types: elaboration, extension, and enhancement. The effectiveness of all these ties is often measured by "distance." Immediate ties link adjacent elements, while mediated and remote ties connect ideas across multiple sentences, requiring the reader to track meaning over greater textual spans to maintain the thread of the discourse.

The concepts of Theme and Rheme are essential to the organization of ideas in a text. According to Halliday and Matthiessen (2013), the Theme is the initial element of a clause, serving as the point of departure for the message. It typically contains "given" or known information. Conversely, the Rheme follows the Theme and provides "new" information (Jing, 2015).

When these elements link across sentences to create coherence, it is known as Thematic Progression. This "skeleton of the plot" ensures a logical flow of information. While scholars like Danes (1974) and Eggins (1994) use slightly different terminology, they generally agree on three primary patterns:

Pattern Name	**Description**	**Example**
Theme Reiteration (Constant/Parallel)	The same Theme is repeated in subsequent clauses.	*John* was born in Russia. *He* loves clowns. *He* joined the circus.
Zigzag (Linear)	The Rheme of one clause becomes the Theme of the next.	There is a *garden*. In the *garden* is a *bed*. The *bed* is full of roses.
Multiple Theme (Split Rheme)	A Rheme contains several components, each becoming a Theme later.	The package includes *flights* and *hotels*. The *flights* are at noon. The *hotels* are 5-star.

Incoherence often arises when these patterns are misused. Arunsirot (2013), building on Bloor and Bloor (1992), identifies five common problems in Thai EFL student writing:

1. Empty Theme: Using Themes that lack semantic content.
2. Brand New Theme: Introducing completely unrelated information in the Theme position.
3. Overuse of Constant Progression: Excessive repetition that makes writing monotonous.
4. Empty Rheme: Failing to provide meaningful new information after the Theme.
5. Confusing Textual Themes: Mismanaging transition signals (e.g., "however," "therefore").

Understanding these patterns allows writers to move beyond simple sentence construction toward creating a cohesive, unified discourse where the "information flow" remains clear and logical for the reader.

SFL has been widely adopted in EFL writing research to analyze discourse organization and coherence development. Previous studies have demonstrated that SFL-based analyses can reveal how learners organize ideas, manage thematic progression, and use cohesive devices in academic writing (Wang, 2007). Thus, SFL can be useful for teaching writing and enhancing textual coherence and is considered an appropriate framework for the present study because it allows textual coherence to be examined systematically at the discourse level rather than only through grammatical accuracy.

2.2 Previous Studies on Cohesion and Thematic Progression in EFL Academic Writing

The teaching of cohesive devices and thematic progression has remained a central focus in academic writing pedagogy, with recent research emphasizing the persistent

challenges university students face in mastering these discourse-level features. Studies by Wang et al. (2024) and Tikhonova (2024) indicate that while undergraduate students can often identify cohesive ties, they struggle with "over-cohesion" or the redundant use of additive conjunctions. This is further supported by Ismi et al. (2025), who found that L2 writers frequently rely on a limited repertoire of transitions, leading to a mechanical rather than a nuanced flow of ideas. Furthermore, Siregar et al. (2023) and Noprival et al. (2022) highlight that the misuse of "reference" and "substitution" often leads to ambiguity in complex academic arguments. In contrast, Hinkel (2019) argues that the pedagogical focus has historically overemphasized grammatical accuracy at the expense of functional cohesion as echoed by Tarigan et al. (2025) in their critique of traditional EAP (English for Academic Purposes) curricula.

Current research also underscores the critical role of thematic progression in achieving macro-level coherence. Gunawan et al. (2017) and Sun et al. (2024) demonstrated that high-scoring academic essays typically utilize a balance of "constant" and "linear" progression patterns, whereas low-scoring writing often suffers from "thematic leaps" or "brand-new themes" that disrupt the reader's cognitive processing. Belmonte and McCabe (2021) suggest that university students often fail to manage "split rhemes," which are essential for organizing multifaceted arguments in research-based writing. This developmental gap is further explored by Purba et al. (2021), who notes that the transition from simple to complex thematic progression patterns remains a significant hurdle for non-native speakers. Additionally, Wei (2014) found that explicit instruction in "thematic development" significantly improves the logical hierarchy of student paragraphs compared to implicit exposure.

In addition, there have been a considerable number of studies that moved toward genre-based and corpus-informed approaches. Crosthwaite (2019) and Golparvar et al. (2024). demonstrate that using data-driven learning (DDL) allows students to visualize how professional writers employ cohesive devices in specific disciplines. Meanwhile, Fatemipour (2015) and Panarook (2022) emphasize the necessity of "rhetorical consciousness-raising" to help students understand that cohesion is not merely a linguistic requirement but a tool for authorial positioning. Studies by Nobles and Paganucci (2015) and Sweety (2019) suggest that digital feedback tools, while helpful for identifying surface-level errors, often fail to address deeper issues in thematic flow. Finally, Wette (2021) argues for a more integrated approach, where cohesion and thematic progression are taught as interdependent elements of metadiscourse, ensuring that university students can meet the rigorous demands of global academic communities.

2.3 Previous Studies on the Use of AI in EFL Academic Writing

The use of AI to enhance textual coherence has emerged as a cornerstone of writing pedagogy. While traditional automated tools primarily focused on surface-level grammar, modern Generative AI (GenAI) models provide sophisticated feedback on global writing features, such as paragraph unity and logical flow. Recent research indicates that real-time AI assistance allows students to immediately recognize errors in sentence structure and the clarity of ideas (Khasanah, 2025). By offering instant, specific critiques on how ideas connect, AI scaffolds the revision process, enabling learners to move from fragmented drafts to cohesive arguments more efficiently than through delayed human feedback alone (Noble et al., 2025). Moreover, Automated Writing Evaluation (AWE) systems, which use

natural language processing and machine learning technologies, have been used to evaluate written texts and provide corrective feedback on grammar, vocabulary, mechanics, and organization (Wilson & Roscoe, 2020). Popular AWE tools (e.g., Grammarly, Criterion, and Write & Improve) have been integrated into writing classrooms to support revision practices and learner autonomy. Studies have shown that AI-generated feedback can improve students' grammatical accuracy, lexical complexity, and overall writing quality by offering immediate and repeated opportunities for revision (Fan, 2023).

Previous studies have reported several benefits of AI-based feedback in writing instruction. AI feedback is often valued for its immediacy, accessibility, and individualized support because learners can receive feedback instantly, they may engage more actively in revision and self-regulated learning processes (Yang et al., 2024). AI-generated feedback has also been associated with increased learner motivation, confidence, and writing autonomy (Duan & Wang, 2026). Furthermore, some studies suggest that AI tools can support higher-order writing skills, including organization and coherence, by providing suggestions related to logical flow and paragraph structure (Amelia & Handayani, 2025).
Despite these advancements, AI-based feedback has limitations. Su-Youn et al. (2023) have reported that AI-generated feedback may sometimes be overly general, inaccurate, or insufficiently sensitive to contextual meaning. Concerns have also been raised regarding overreliance on AI tools, which reduces critical thinking, leading to learners accepting AI suggestions uncritically. Additionally, most AI feedback systems are primarily designed to detect sentence-level errors rather than analyze discourse-level features. Therefore, further research is needed to examine how AI-generated feedback can support textual coherence from a discourse-oriented perspective. A critical literature review reveals a "coherence gap" in how AI and humans prioritize feedback. While AI feedback is often rated as more thorough and organized in its delivery—leading to measurable improvements in linguistic accuracy and content development—it often leans toward repetitive structures that lack the nuanced transitions of human writing. Furthermore, while tools like ChatGPT-5 show strong alignment with human scoring on structural rubrics, human raters remain superior at detecting subtle lapses in argumentation and contextual judgment (Martin et al., 2026). Consequently, the most effective modern strategies employ a "hybrid model," using AI to refine the technical flow and cohesion of a text while relying on human instructors to ensure the depth and authenticity of the scholarly voice.

The present study focuses on the use of ChatGPT and Gemini as AI-based feedback tools for EFL writing instruction. These AI tools were selected because they are advanced generative AI systems capable of producing interactive and context-sensitive feedback. ChatGPT and Gemini can provide explanations, examples, and revision suggestions at both sentence and discourse levels. This feature makes them potentially valuable for improving Theme–Rheme organization, thematic progression, cohesive ties, and overall textual coherence from an SFL perspective. Therefore, the use of ChatGPT and Gemini aligns closely with the theoretical framework and research objectives of this study. Moreover, the two AI systems are developed using different large language model architectures, which may result in differences in feedback style, specificity, and coherence-related suggestions. Comparing or examining their feedback may therefore provide useful insights into the effectiveness of generative AI tools in supporting coherence development in EFL writing.
Although previous studies have demonstrated the effectiveness of AI-based feedback in improving EFL writing, most research has primarily focused on surface-level features such as grammar, vocabulary, and overall writing quality (Fan, 2023; Wilson & Roscoe, 2020).

Few studies have examined how AI-generated feedback may support textual coherence at the discourse level, particularly through the lens of SFL. In addition, limited research has investigated coherence-related features, such as Theme–Rheme organization, thematic progression, and cohesion in AI-assisted writing instruction. Studies exploring the use of generative AI tools for enhancing textual coherence in EFL writing also remain scarce. Therefore, the present study seeks to address this gap by investigating the effectiveness of AI-based feedback in improving textual coherence from an SFL perspective.

3. Research Methodology

The design of this study was a one-group Pre-test Post-test design. It was a quasi-experimental study using the convenience sampling method. The participants were given a pre- and post-test, so that their scores were compared before and after the experiment. Subsequently, some of the participants were interviewed so that the results were triangulated.

3.1 Participants

Participants were 23 graduate students in one intact group who took an English remedial course at a university in Bangkok, Thailand. There was no randomization in the selection process. The participants were all from a business program, and their English proficiency ranged between A2 and B1. The were 10 males and 13 females with the age range between 26-48.

3.2 Research Instruments

Several research instruments were used in this study, including writing tasks, AI-assisted teacher feedback, writing scoring rubrics, and semi-structured interviews.

3.2.1 Writing Tasks

The participants completed a pre-test and a post-test in the form of expository cause-effect paragraph writing. The pre-test topic was “Why We Should Study English,” while the post-test topic was “Why We Should Study Business.” For both tasks, participants were asked to write a paragraph of approximately 200–250 words within 30 minutes. The writing tasks were designed to elicit students’ ability to organize ideas coherently through the use of thematic progression and cohesive devices.

During the treatment period, the participants completed four additional expository paragraph writing tasks. These writing activities provided opportunities for the participants to revise their drafts based on AI-assisted teacher feedback, focusing on textual coherence.

3.2.2 AI-Assisted Teacher Feedback

The feedback used in this study was AI-assisted teacher written feedback adapted from generative AI platforms, namely ChatGPT and Gemini. The AI-generated feedback was reviewed, selected, and modified by the teacher before being provided to the

students through Google Classroom. This procedure ensured that the feedback was contextually appropriate and aligned with the instructional objectives of the course.

The feedback followed a directive feedback approach in which explicit suggestions and examples were provided to help students improve textual coherence in their writing. The feedback mainly focused on coherence-related features derived from the Systemic Functional Linguistics (SFL) framework, including Theme–Rheme organization, thematic progression patterns, cohesive devices, logical sequencing of ideas, and overall flow of the text. The participants were encouraged to revise their writing by improving thematic connections between sentences and using cohesive devices appropriately.

3.2.3 Writing Scoring Rubrics

Based on the writing evaluation criteria in Tangkiengsirisin (2010), each piece of writing in the pre- and post-test was worth 10 points. Each participant was given one holistic score for their pre-test and one for their post-test.

Table 1 : Writing Score Rubrics

Score	Criteria
2	Has a clear paragraph structure: topic sentence, supporting sentences, and concluding sentence
3	Has an appropriate Theme and Rheme pattern
3	Uses appropriate cohesive devices
2	Has good overall meaning and flow of text
Total 10 points	

3.2.4 Semi-Structured Interview

Semi-structured interviews were conducted after the treatment to explore students' perceptions of AI-assisted teacher feedback. Six students voluntarily participated in the interviews, including three male and three female students. The interview questions focused on students' experiences with thematic progression, cohesive devices, and the usefulness of AI-based feedback in improving textual coherence. The interview protocol was reviewed by an expert in ELT and writing instruction to ensure content validity.

The interview questions include the following:

1. What did you think about the feedback provided to your initial drafts?
2. How did you find the AI-based teacher feedback on thematic progression and cohesion that you received?
3. What did you think about your ability to use thematic progression and cohesion before you started the writing course?
4. What did you think about the use of thematic progression and cohesion in writing?
5. What was your proficiency regarding the use of thematic progression and cohesion after the end of the course?

4. Data Collection

The data collection process was conducted in several stages. First, a pre-test was given to the participants at the beginning of the experiment. The participants were asked to write an expository cause-effect paragraph on a given topic. During the experiment, the students had to create four expository paragraphs. They received teacher feedback, which was adapted from AI feedback from ChatGPT and Gemini to help them improve textual coherence (i.e. cohesion and thematic progression) in their revision. The teacher reviewed and modified the AI-generated feedback before delivering it to the students via Google Classroom. The students then revised their writing based on the feedback provided. After the treatment, a post-test was given when the participants had to write another expository cause-effect paragraph. The pre-test and post-test scores were analyzed to see the difference in the students' writing scores. Then six students were recruited for a semi-structured interview on a voluntary basis. Three of them were males and the other three were females. Content analysis was conducted to yield findings from the interview data. Due to the limited number of participants, questionnaire was not used to collect perception data in this study.

5. Data Analysis

Both quantitative and qualitative data analyses were employed in this study.

5.1 Quantitative Analysis

The pre-test and post-test writings were scored using the writing scoring rubric adapted from Tangkiengsirisin (2010). The analysis focused on coherence-related elements derived from the SFL framework, particularly Theme–Rheme organization, thematic progression, cohesive devices, and overall textual flow. Paired sample t-tests were conducted to compare the participants' pre-test and post-test scores and determine whether there were statistically significant improvements after the treatment. Separate analyses were also conducted for thematic progression and cohesive devices to investigate the extent to which the AI-assisted teacher feedback enhanced specific aspects of textual coherence. To ensure scoring reliability, the pre-test and post-test writings were rated independently by the researcher and another scorer, who was a PhD student in the ELT program at a university in Thailand. The inter-rater agreement for the overall writing scores was 90%.

5.2 Qualitative Analysis

The interview data were analyzed using content analysis. The interview transcripts were coded and categorized according to recurring themes related to students' perceptions of AI-assisted teacher feedback, thematic progression, cohesion, and coherence development. To ensure reliability in the qualitative analysis, an inter-coder agreement of 92% was achieved between the researcher and another coder, who was a PhD student in the ELT program at a university in Thailand.

6. Research Ethics

The participants voluntarily participated in the experiment after they were informed of being part of a research study. The participants were told that their writing would be

used as data for the study. They completed the consent form to ensure their willingness to join the experiment.

7. Results

This section provides the findings from quantitative analysis (score data) and qualitative analysis (interview data) respectively. The results to be reported also follow the sequence of the research questions.

To respond to Research Question 1:

To what extent does the teacher feedback using AI enhance overall textual coherence in student L2 writing?

a paired sample *t*-test was conducted to compare the students' pre- and post-test scores based on their writing performance before and after the treatment. The results are presented below:

Table 2 : Mean and Standard Deviation of Writing Scores in Pre-Test and Post-Test

Tests	N	Mean	SD	DF	t-value	p-value
Pre-test	23	4.61	1.08	22	26.7243	0.0001*
Post-test	23	8.48	0.90			

($p < 0.05$, statistically significant)

The pre-test was set to see the general ability in participants' writing prior to the AI-based teacher feedback. Then in the post-test, the participants were required to apply what they learned from the writing course and from the direct feedback they had received. The pre- and post-tests were evaluated using the same writing score rubrics to analyze the improvement of their writing performance. The results reveal that the participants scored better on average in their post-test than in their pre-test. That is, the overall textual coherence in their writing was significantly improved ($t = 26.7243$; $p = 0.0001$).

To respond to Research Question 2:

To what extent does the teacher feedback using AI enhance the effective use of thematic progression and cohesive devices in student L2 writing?

a paired sample *t*-test was also conducted to compare the students' pre- and post-test scores based on their use of thematic progression and cohesive devices. The results are presented below:

Table 3 : Mean and Standard Deviation of Writing Scores by Coherence Techniques

Coherence Techniques	Pre-test Mean (SD)	Post-test Mean (SD)	t-value	p-value
Thematic Progression	1.48 (0.51)	2.39 (0.50)	15.1987	0.0001*
Cohesive Devices	1.70 (0.47)	2.57 (0.51)	12.1106	0.0001*

($p < 0.05$, statistically significant)

The results disclose that the teacher feedback had a tendency in enhancing the use of thematic progression patterns and cohesive devices in student writing. The participants

receiving made significantly greater progress after receiving AI-based teacher feedback in both aspects ($p < 0.05$). This is probably due to the effectiveness of the AI-based teacher feedback that provided clear guidance so that the students were able to produce appropriate thematic progression patterns and cohesion.

To respond to Research Question 3:

What are the students' perceptions on the teacher feedback using AI regarding their improvement in textual coherence?

interview data were analyzed using content analysis. The analysis was based on the interview questions asked during the semi-structured interview. The content analysis reveals three major themes: 1) perceptions of AI-based teacher feedback, 2) understanding of thematic progression and cohesion, and 3) perceived improvement in textual coherence.

Perceptions of the AI-based teacher feedback

Most participants reported positive perceptions toward the AI-based teacher feedback. The students generally found the feedback clear, useful, and supportive for revising their writing. Several participants stated that the feedback helped them better understand how to improve the organization and flow of ideas in their paragraphs.

> One student said, *"I really liked using the provided feedback for my essays. Usually, when I get comments on cohesion, I'm not sure what to change, but this was super clear and actually showed me where my writing was weak."*

> Another student said, *"The best part for me was how it handled my paragraph structure. It helped me understand exactly how to reorganize my sentences so the whole paragraph flowed much better."*

A student explained that if he had received more feedback, he would have been able to write better. He would need more guidelines for his revision. He said,

> *"The feedback I got was a good start, but it was just too limited. If I had received more feedback on how to make my writing more coherent, I would have been able to write a much better final paper."*

Another student felt that most of the feedback was clear and useful. Therefore, if students received vivid feedback, they would be able to write more effectively. If feedback was unclear, students would still find it difficult to revise their first drafts. She said,

> *"If we received more feedback on how to use thematic progression, we'd be able to write more effectively. When feedback is too vague or just a little feedback is provided, we just get stuck trying to guess how to fix our draft."*

Overall, the findings suggest that the participants viewed AI-assisted teacher feedback positively and considered it beneficial for improving their writing performance and textual coherence.

Understanding of Thematic Progression and Cohesion

The interview findings also revealed that the participants developed greater awareness of thematic progression and cohesive devices. These findings can triangulate with the output the students produced after treatment (feedback delivery). Most students demonstrated an improved understanding of how ideas could be connected logically within a paragraph. They apparently had a better understanding of how to organize and join ideas in their writing. It was found that they knew there were many types of thematic progression patterns and cohesive devices that they could choose from to make their writing more coherent, and that cohesiveness helped a piece of writing to be more readable.

> One student said, *"Before the feedback, I just wrote sentences one after the other without really thinking about how they should be linked. But through this process, I developed a much greater awareness of thematic progression and cohesive devices. I realized there are actually many different patterns you can choose from to guide the reader. In my final drafts, I felt I had a much better understanding of how to logically organize and join my ideas so the whole paragraph flows smoothly."*

> Another student said, *"The feedback helped me choose the right cohesive devices to bridge my thoughts. Once I started applying those patterns, my writing became more readable."*

One participant stated that, by the end of the writing course, he had understood how to make ideas flow more smoothly in writing. He learned from the course that a paragraph should be well-organized so that it would be easier for the reader to understand it. He became aware that writers could use thematic progression and cohesive devices to keep ideas flowing more smoothly. These techniques were very useful to help them think more logically and organize ideas more appropriately. He said,

> *"Now I've learned that a paragraph has to be well-organized so that it's easier for a reader to understand it. I became really aware of how writers should use specific techniques like thematic progression and cohesive devices to keep ideas connected. Learning these techniques was so useful because it forced me to think more logically and organize my ideas more appropriately than I used to."*

Another student maintained that there were a variety of writing situations and different types of cohesion could be used. For example, she could use a pronoun for reference, and she could also use a connector to combine ideas in two clauses. She said,

> *"I realized that I have to use different types of cohesion depending on the purpose. For example, if I just want to avoid repeating the same noun in a paragraph, I can use a pronoun for reference. But if I need to build a logical relationship between two separate clauses, I can use a connector to combine those ideas instead."*

Regarding thematic progression, a student confirmed that this strategy was very useful to make her writing more coherent. Each pattern of thematic progression could

provide her with a direction to guide her towards creating a subsequent sentence in a paragraph more effectively.

Perceived Improvement in Textual Coherence

Most participants believed that their ability to write coherently improved after receiving AI-based teacher feedback. The students reported that they became more confident in organizing ideas, linking sentences, and maintaining the flow of information throughout a paragraph.

> One student said, *"My ability to write coherently improved after I started getting the AI-based teacher feedback. Before this, I always felt a bit unsure of whether my thoughts were making sense to anyone else. But after using the feedback, I became so much more confident in organizing my ideas and linking my sentences together. I feel more in control of my writing now."*

The participants also indicated that, before the course, they had limited knowledge of thematic progression and cohesion. However, after receiving feedback and practicing revision, they felt more capable of applying these techniques in their writing. The findings from the interviews are consistent with the quantitative results, which showed significant improvement in the students' use of thematic progression and cohesive devices in the post-test.

> A student said, *"Before this course, I had very limited knowledge of what thematic progression and cohesion even were. But after I started receiving the feedback and actually practicing how to revise the drafts based on those concepts, I could apply those specific techniques in my own writing. My test scores showed a big improvement as I continued using those techniques."*

Overall, the interview findings suggest that AI-based teacher feedback helped enhance the students' understanding and application of textual coherence strategies in EFL writing.

8. Discussion

The findings offer significant insights into the transformative potential of AI-based teacher feedback in academic writing instruction. The quantitative results demonstrate that AI-assisted teacher feedback contributed to significant improvement in the participants' textual coherence, particularly in the use of thematic progression and cohesive devices. These findings support previous studies on AI-based writing feedback, which reported that AI-generated feedback can improve writing quality, organization, and learner revision practices (Fan, 2023; Yang et al., 2024). Similar to the findings of Amelia and Handayani (2025), the present study suggests that AI-supported feedback may help students develop stronger discourse organization and clearer logical connections between ideas.

The findings also suggest that AI-based feedback could facilitate the teacher in delivering directive feedback more effectively and could lead to a measurable enhancement in student writing development, particularly regarding textual coherence and macro-structural organization. This supports recent studies on AWE, which emphasize the

importance of immediate and continuous feedback in promoting revision and self-regulated learning (Wilson & Roscoe, 2020). Furthermore, the results suggest a "learning effect" where students demonstrated a gradual adaptation to feedback, leading to a sustained reduction in coherence inappropriateness over time. This underscores that the continuous, systematic nature of AI capability is vital for assisting human instructors to deliver feedback consistently and aligns with Duan and Wang (2026), who found that AI-assisted writing feedback could enhance learner autonomy and metalinguistic awareness during revision.

From an SFL perspective, the findings regarding thematic progression support established discourse analysis theories, confirming that explicit instruction in thematic progression patterns significantly enhances the organizational structure of student writing. Participants reported that understanding the relationship between the Theme (the point of departure) and the Rheme (the new information) provided a clearer mental framework for drafting. This supports the work of Purba and Pasaribu (2021), who argued that textual analysis assists students in visualizing the macro-organization of their prose. By conceptualizing the first part of a sentence as an "umbrella" for the text, students can better manage the sequence of ideas and the logical flow of information. Similarly, Wei (2014) reported that explicit instruction in thematic development improved coherence and organizational clarity in EFL writing.

While Purba and Pasaribu (2021) established thematic progression as a parameter for academic development, studies by Feri et al. (2023) suggest that the transition from simple linear progression to more complex patterns is a key indicator of advanced academic literacy. Interestingly, the preference for the Split Rheme pattern among Thai participants in this study suggests a cross-linguistic influence. A study by Na-on & Jaturapitakkul (2017) noted that Thai learners favored the Linear and Constant Thematic Progression patterns in abstract writing as these patterns are similar to those commonly used in Thai academic writing.

Moreover, the successful adoption of thematic progression patterns by beginners suggests that this specific thematic structure serves as an effective pedagogical starting point. As students progressed during the experiment, their increased use of systematic thematic progression patterns mirrors findings by Kalra (2025), who observed that consistent "thematic mapping" significantly reduces instances of "empty themes" or logical leaps. Consequently, the ability to apply these patterns not only simplifies the writing process for English as a Second Language (ESL) learners but also serves as a quantifiable metric for their transition from novice to intermediate academic writers.

The findings also suggest that requiring students to engage in iterative revision in response to AI-based teacher written feedback significantly enhances the cohesive quality of their prose. This aligns with contemporary longitudinal research indicating that the revision process acts as a cognitive catalyst for linguistic development (Bitchener & Ferris (2012).). While foundational studies initially focused on broad accuracy (Ardiana et al., 2025), recent scholarship has pivoted toward socio-cognitive perspectives, suggesting that feedback-driven revision facilitates "noticing" and the internalization of complex discourse structures. Furthermore, recent empirical data supports the long-term efficacy of feedback, demonstrating that consistent intervention leads to sustained gains in writing proficiency rather than mere grammatical and lexical corrections. In this study, the data confirms that

students' mastery of cohesiveness in their writing became successful through this recursive process including teacher feedback and revision.

The qualitative findings further support previous research regarding learner perceptions of AI-based feedback. Most participants perceived the AI-assisted teacher feedback positively and believed that the feedback helped them improve their writing organization and coherence. These findings align with Yang et al. (2024), who reported that students generally valued AI-generated feedback because of its clarity, immediacy, and usefulness during revision. Similarly, Fan (2023) found that students appreciated AI-supported feedback because it provided direct suggestions that facilitated self-correction and revision. In the present study, several participants stated that the feedback helped them better understand how to connect ideas and organize paragraphs more effectively.

However, the findings also reflect some concerns discussed in previous AI-feedback research. Some participants indicated that unclear or limited feedback made revision more difficult, which supports Su-Youn et al. (2023), who argued that AI-generated feedback may sometimes lack specificity or contextual sensitivity. This suggests that AI-generated feedback alone may not always be sufficient for supporting discourse-level writing development. Instead, the present study supports the effectiveness of a hybrid feedback model in which AI-generated feedback is reviewed and adapted by the teacher before being delivered to students. This finding corresponds with Martin et al. (2026), who suggested that combining AI efficiency with human pedagogical judgment may produce more effective writing support than relying solely on automated systems.

Overall, the findings demonstrate that AI-assisted teacher feedback can effectively support the development of textual coherence in EFL writing, particularly when analyzed through the lens of Systemic Functional Linguistics. By focusing on Theme–Rheme organization, thematic progression, and cohesive ties, the present study extends previous AI-feedback research beyond surface-level grammatical correction and contributes to a growing body of discourse-oriented studies in AI-assisted language learning.

Implications for Writing Innovation

The findings underscore that AI-based teacher written feedback functions as a critical mechanism for improving textual coherence, as evidenced by the increased frequency and functional variety of thematic progression and cohesive devices in subsequent drafts. Moving beyond traditional "error corrections," this study reflects an innovative view of feedback as a tool for metalinguistic awareness. By engaging with feedback, writers develop a heightened sensitivity to discourse flow—a finding echoed by recent explorations into AWE and blended feedback environments (Ene & Upton, 2018; Zhang, 2020). Ultimately, the delivery of feedback in this study successfully redirected student attention from isolated lexical choices to the broader structural integrity of expository writing, fostering a more sophisticated, unified rhetorical style. Therefore, the integration of AI-assisted feedback with SFL-informed writing instruction may provide an effective pedagogical approach for supporting discourse-level writing development in EFL contexts.

In addition, the present study contributes to the growing discussion on the pedagogical role of generative AI tools such as ChatGPT and Gemini in language

education. While many previous AI-based writing studies have focused mainly on grammar and vocabulary improvement, the current findings suggest that generative AI tools may also support higher-order writing skills, including coherence, organization, and thematic development, when appropriately guided by teachers and grounded in discourse-based frameworks such as SFL.

9. Conclusion

This study demonstrates that the integration of AI-assisted teacher feedback serves as a powerful intervention for Thai graduate students who face the challenges of academic writing. The quantitative results—showing a significant increase in mean scores—provide robust evidence that directive, AI-informed feedback effectively bridges the gap between fragmented drafting and cohesive prose. By focusing on the linguistic infrastructure of thematic progression and cohesive devices, students were able to move beyond the mechanical use of cohesion and error correction toward a more sophisticated management of information flow.

The findings also suggest that when students are provided with a clear "meta-linguistic roadmap," they can successfully navigate the "Theme-Rheme" structure to avoid common pitfalls like thematic leaps or empty themes. The shift toward more complex patterns, such as the Split Rheme, indicates an emerging level of academic writing skills that allows students to handle multifaceted arguments typical of graduate-level expository writing.

Furthermore, the qualitative data highlights a significant shift in student perception. The interviews revealed that students did not merely see AI-based feedback as a correction tool, but as a scaffold for metacognitive awareness. The participants expressed a new understanding of writing as a recursive, logical process rather than a static translation task. This awareness is crucial for L2 learners, as it empowers them to diagnose their own writing and intentionally apply strategies to ensure textual coherence.

Ultimately, this research advocates for a hybrid pedagogical model. While AI provides the consistency and technical precision needed for systemic feedback on discourse structures, the teacher remains essential in adapting that feedback to the specific rhetorical needs of the student. As university students in Thailand and other EAP contexts continue to face global academic demands, the synergy between AI's analytical capabilities and explicit SFL-based instruction offers a transformative path toward achieving clarity, authority, and coherence in scholarly communication.

Nevertheless, several limitations should be acknowledged. First, the study employed a one-group pretest–posttest design without a control group, which limits the ability to determine whether the improvement resulted solely from the AI-assisted feedback intervention. Second, the number of participants was relatively small and restricted to Thai graduate students in a single educational context, and their English proficiency levels ranged only from A2 to B1. These factors may limit the generalizability of the findings to other educational contexts, disciplines, or learner proficiency levels. Third, due to time constraints, the long-term impact of AI-assisted teacher feedback on students' writing development could not be fully examined. In addition, although the interview findings

provided valuable insights into students' perceptions, only six participants were interviewed, which may not fully represent the perspectives of all learners in the study.

Future research may investigate the effectiveness of AI-assisted teacher feedback across different writing genres, educational contexts, and learner proficiency levels. Comparative studies examining different AI platforms or feedback approaches may also provide a deeper understanding of how generative AI can support discourse-level writing development. Furthermore, longitudinal research incorporating more detailed SFL-based discourse analysis may help explain how learners gradually develop thematic progression, cohesion, and textual coherence over time through AI-supported writing instruction.

10. References

Amelia, M., & Handayani, F. (2025). AI for coherent writing: Supporting EFL learners' text structure development. *Journal of English Language Learning, 9*(2). https://doi.org/10.31949/jell.v9i2.16284

Ardiana, A., Rum, E.P., & Syatriana, E. (2025). From Feedback to Artificial Intelligence: A Bibliometric Mapping Analysis of the Thematic Evolution of EFL Writing Assessment Research Trends (2014–2024). *International Journal of Learning, Teaching and Educational Research*, 24(9), 893-921.

Arunsirot, S. (2013). An Analysis of Textual Metafunction in Thai EFL Students' Writing. *Novitas-ROYAL (Research on Youth and Language)*, 7(2), 160-174.

Bamberg, B. (1984). Assessing coherence: A reanalysis of essays written for the National Assessment of Education Progress. *Research in the Teaching of English, 18,* 305-319.

Belmonte, I. A., & McCabe, A. (1998). Theme-rheme patterns in intermediate and advanced Spanish learners of English. *Sino-US English Teaching*, 1(1), 13-31.

Bitchener, J., & Ferris, D. R. (2012). *Written Corrective Feedback in Second Language Acquisition and Writing*, Routledge.

Bloor, M & Bloor, T. (1992) Given and new information in the thematic organization of text: an application to the teaching of academic writing. *Occasional Papers in Systemic Linguistics*,
6, 33-44.

Carrell, P.L. (1982). Cohesion is not coherence. *TESOL Quarterly, 16* (4), 479-488.

Crosthwaite (2019). Data-driven learning and younger learners: Introduction to the volume. In Crosthwaite (Ed.) *Data-Driven Learning for the Next Generation: Corpora and DDL for Pre-tertiary Learners*. London: Routledge.

Daneš, F. (1974). Functional sentence perspective and the organization of the text. In F. Daneš (Ed.), *Papers on Functional Sentence Perspective* (pp. 106-128). Academia.

Duan, C., & Wang, Y. (2026). Transforming EFL writing instruction with generative AI: Evaluating feedback quality and learner independence. *International Journal of Mechanical Engineering Education*. https://doi.org/10.1177/03064190261445582

Eggins, S. (1994). *An introduction to systemic functional linguistics*. New York: Pinter Publishers.

Enkvist, N.E. (1990). Seven Problems in the Study of Coherence and Interpretability. In U. Connor and A.M. Johns (Eds.), *Coherence in writing: Research and Pedagogical Perspectives* pp. 11-28). Alexandria, VA:TESOL.

Fan, N. (2023). Exploring the Effects of Automated Written Corrective Feedback on EFL Students' Writing Quality: A Mixed-Methods Study. *SAGE Open, 13*(2). https://doi.org/10.1177/21582440231181296

Fatemipour, H. & Hemmati, S. (2015). Impact of consciousness-raising activities on young English language learners' grammar performance. *English Language Teaching*,8(9), 1-10.

Feri, Z.O., Ashadi, Triyono, S., & Pranowo, D.D. (2023). Thematic Structure in Students' Writings: Implications on their Ideas Organization and Development. *Register Journal*, 16 (1), 49-72.

Golparvar, S.E., Crosthwaite, P. , & Ziaeian, E. (2024). Mapping cohesion in research articles of applied linguistics: A close look at rhetorical sections. *Journal of English for Academic Purposes,* 67, 1-14.

Grabe, W. (1985). Written Discourse Analysis. In R.B. Kaplan (Ed.), *Annual Review of Applied Linguistics* (Vol. 5, pp. 101–123). New York: Cambridge University.

Gunawan, W., & Aziza, F. (2017). Theme and Thematic Progression of Undergraduate Thesis: Investigating Meaning Making in Academic Writing. *Indonesian Journal of Applied Linguistics*, 7(2), 413-424.

Halliday, M.A.K. (1994). *An Introduction to Functional Grammar* (2nd ed.). London: Edward Arnold.

Halliday, M. A. K., & Hasan, R. (1976*). Cohesion in English*. Longman.

Halliday, M. A. K., & Matthiessen, C. M. (2013). *Halliday's introduction to functional grammar*. Routledge.

Hinkel, E. (2004). *Teaching Academic ESL Writing: Practical Techniques in Vocabulary and Grammar*. Routledge.

Hyland, K. (2003). *Second language writing*. Cambridge University Press.

Hyland, K., & Hyland, F. (2006). *Feedback in Second Language Writing: Contexts and Issues*. Cambridge University Press.

Ismi, N., Anggreni, A., & Rofiqoh, B. Cohesion and Coherence in EFL Academic Writing: A Case Study of Tadulako University. *Journal on Interdisciplinary Studies in Humanities*, 8(2), 749-758.

Jing, W. (2015). Theme and Thematic Progression in learner English: A literature review. *Colombian Applied Linguistics Journal*, 16(1), 67-80.

Kalra, R. (2025). From Struggle to Structure: Scaffolding Genre Writing for Emerging Writers. *Journal of Multidisciplinary in Humanities and Social Sciences*, 8(6), 2474–2487.

Khasanah, S. (2025). Effectiveness of AI Real-Time Feedback Assistance in Improving Writing Skills. *Composition Studies*, 8(1), 40-48.

Martin S., Beecham E., Kursumovic E., Armstrong RA., Cook TM., Déom N., et al. (2026) Comparing human vs. machine-assisted analysis to develop a new approach for Big Qualitative Data Analysis. *PLOS Digit Health,* 5(2): e0000576.

Na-on, R., & Jaturapitakkul, N. (2017). Identifying Thematic and Rhetorical Patterns in Research Project Abstracts of Thai EFL Engineering Undergraduates. *LEARN Journal :Language Education and Acquisition Research Network Journal*, 10(2), 71-89.

Noble, L., Wong, A., & Chan, S. (2025). The Impact of Generative AI on Essay Revisions and Student Engagement. *Computers and Education Open,* 9(4), Article 100249.

Nobles, S. & Paganucci, L. (2015) Do Digital Writing Tools Deliver? Student Perceptions of Writing Quality Using Digital Tools and Online Writing Environments. *Computers and Composition*, 38, 16-31.

Noprival, N., Alfian, A., & Soma, R. (2022). Analyzing Grammatical and Lexical Cohesion in A Legendary Short Story. *Indonesian Journal of EFL and Linguistics*, *7*(2), 251-263.

Paltridge, B. (2012). *Discourse Analysis: An Introduction (2nd ed.).* Bloomsbury.

Panarook, P. (2022). The Effectiveness of Consciousness-Raising Tasks in Teaching and Learning Phrases and Clauses of L2 Learners at Tertiary Level. *Manutsayasat Wichakan,* 20(2), 223-252.

Purba, G. & Pasaribu A.N. (2021). Thematic Progression in Students' Descriptive Text. *International Journal of Educational Research & Social Sciences*, 2(3), 503-507

Sommers, N. (1982). Responding to Student Writing. *College Composition and Communication*, 33(2), 148-156.

Siregar, J., Nurlela , T., & Zein, T. (2023). An Analysis of Cohesive Devices in EFL Students' Essay Writing. *Indonesian Journal of EFL and Linguistics*, 8(1), 39-53.

Sun, G., Ahmad, N.K., & Nawi. N. (2024). Applying Theme Types and Thematic Progression to Cohesion and Coherence of IELTS Academic Writing Task 2: A Qualitative Descriptive Study. *Forum for Linguistic Studies*, 6(6), 473-488.

Tangkiengsirisin, S. (2010). Enhancing Cohesion in Second Language Writing: A Study of Thai Graduate Students' Expository Compositions. *The International Journal of Learning*, 17(7), 33-46.

Tarigan, F. & Zahiri, A. (2025). Theme and Thematic Progression in EFL Students' Writing: A Systemic Functional Linguistics Analysis. *Southeast Asia Language Teaching and Learning (SALTeL) Journal*, 8(1), 39-46.

Su-Youn, Y., Miszoglad, E., & Pierce, L. R. (2023). Evaluation of ChatGPT Feedback on ELL Writers' Coherence and Cohesion. arXiv. https://arxiv.org/abs/2310.06505

Sweety, L. (2019). Using Digital Tools to Assess and Improve College Student Writing. *Higher Education Studies,* 9(2),117-123.

Tikhonova, E. (2024). Text Redundancy in Academic Writing: A Systematic Scoping Review. *Journal of language and Education,* 10(3), 128-160.

Wang, L. (2007). Theme and rheme in the thematic organization of text: Implications for teaching academic writing. *Asian EFL Journal, 9*(1), 164–176.

Wang, W., Chen, W., Shi, S., Tong, L., & Duan, M. (2024). A Corpus-Based Study on Cohesion Development in Writing by EFL Novices. *Journal of Language Teaching and Research*, 15(3). 772-786.

Wei, J. (2014). Theme and thematic progression in learner English: A literature review. *Colombian Applied Linguistics Journal*, 16(1), 67-80.

Wette, R. (2021). *Writing Using Sources for Academic Purposes: Theory, Research and Practice.* Routledge.

Wilson, J., & Roscoe, R. D. (2020). Automated Writing Evaluation and Feedback: Multiple Metrics of Efficacy. *Journal of Educational Computing Research, 58*(1), 87–125. https://doi.org/10.1177/0735633119830764

Yang, H., Gao, C., & Shen, H. (2024). Learner interaction with, and response to, AI-programmed automated writing evaluation feedback in EFL writing: An exploratory study. *Education and Information Technologies, 29*(4), 3837–3858. https://doi.org/10.1007/s10639-023-11991-3

Zhai, Y. (2026). Automated written corrective feedback: fostering writing accuracy, self-regulation, and motivational dynamics in EFL learners. *BMC Psychology,* 14(1), 1-21.