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DEVELOPING HARMONY OF DIGITAL TRANSFORMATION IN ELT

An Analysis of Cohesion and Coherence in Analytical Exposition Texts Generated by AI Chatbot Auto-generative System

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Abstract

The advancement of technology can either nurture the learning or bring setbacks to the education. One of the results of the technology advances is the development of Artificial Intelligence (AI) in which it is used worldwide to help learners answer their learning problem through an auto-generative system known as ChatGPT. This study was aimed at investigating the quality of cohesion and coherence in analytical exposition texts made by AI Chatbot Auto-generative System. Cohesion and coherence play a significant role in the clarity and the comprehensibility of a written text and this study evaluated the cohesive device and coherence of the texts it generates. As many as nine texts produced by AI Chatbot were employed in this qualitative case study. To determine the coherence and cohesion of the texts, the analysis of the texts employed systemic functional linguistics (SFL), with a particular emphasis on the schematic structure and linguistic features focused on elements that contribute to the cohesion of the texts, including Theme progression and cohesive devices. The findings of this study indicate that the AI Chatbot has the ability to produce analytical exposition texts through various themes in terms of cohesion and coherence. It is also found five cohesive devices that contribute to producing cohesive text such as reference, lexical, conjunction, substitution, and ellipsis. To create coherence especially at the sentence level, the texts that it produced also employ two types of themes namely topical and textual themes, and thematic development consistency that involve the constant and zigzag patterns. Based on the findings, it can be said that AI Chatbot such as ChatGPT can be used as the learning model in creating the written texts especially the analytical exposition texts for the EFL classroom context.

Keywords: AI Chatbot Auto-generative System; analytical exposition; cohesion; coherence; text analysis

INTRODUCTION

The rapid advancement of technology has brought about significant changes in the realm of education, offering both opportunities and challenges. According to Feng, Saricaoglu, and Chukharev-Hudilainen (2016), technology can help teachers create successful classroom environments. Besides, L. Al-Labadi and S. Sant (2021) states that teachers should employ technology in the classroom to provide a more immersive learning environment since students typically believe that when technology is used, they absorb the lesson topic better. Therefore, Miranty, D, et. al. (2023) states that the use of technological tools has influenced new teaching and assessment methods. One noteworthy outcome of technological progress is the widespread use of Artificial Intelligence (AI) in educational settings. AI-

driven solutions, such as the ChatGPT auto-generative system, have gained global popularity as they assist learners in addressing various learning challenges and needs, especially in writing.

The Indonesian government is highly concerned with boosting students' writing abilities since writing plays a role in students' learning achievement. This is reflected in the curriculum, which stresses the development of students' writing abilities. According to the 2013 Curriculum, students in a formal school are obliged and expected to compose several forms of text. Especially senior high school students in Indonesia are needed to be able to write numerous genres, one of which is analytical exposition text. Students are required to be able to create a cohesive and comprehensible content while writing (Krisnawati, 2013). Because cohesiveness shows continuity between discourses (Crossley, Kyle, & McNamara, 2016; Wang & Guo, 2014), if the sentences or phrases in a text are connected to one another, it is said to be cohesive. Cohesive itself can be constructed by using "semantic ties" in the form of cohesive devices to bond texts together to produce a coherent whole (Eggins, 2004; Halliday & Hasan, 1976; Rahman, 2013). Meanwhile, coherence is related to situational and cultural contexts. Thus, a text is considered to be coherent if readers can recognize the scenario in the text, identify the genre of the text, and presume that the content makes sense (Eggins, 2004; Emilia, 2014; Halliday & Hasan, 1976, 1989; Hyland, 2006).

Considering these technological and educational developments, it is crucial to examine how various elements, including cohesion and coherence, influence text readability. Todirascu (et al., 2021) and Zahra (et al., 2020) both delve into aspects of text analysis to comprehend how various elements influence text readability. While Amalia Todirascu's research breaks away from conventional studies that primarily scrutinise factors like word choice and sentence structure, focusing on the more advanced facets of text cohesion and coherence, Zahra's examination centres on assessing the organisation and comprehensibility of seventh-grade students' descriptive texts. Todirascu's study involves the exploration of 41 distinct measures associated with text cohesion and coherence as potential indicators of text readability. This comprehensive approach enables a deeper understanding of how a text's flow and structure impact its readability. In contrast, Zahra's research involves the examination of descriptive texts authored by seventh-grade students, with a particular focus on assessing their organisation and comprehensibility. The study employs a method rooted in linguistic theory known as systemic functional linguistics (SFL), which centres on themes within the text as a critical aspect of analysis.

Another investigation into cohesion was undertaken by Emilia, Habibi, and Bangga (2018). This particular study focused on the analysis of exposition texts authored by high school students, representing individuals with varying levels of academic achievement—low, middle, and high achievers. The researchers conducted a thorough examination of these texts, scrutinising their generic structure, theme progression, and the cohesive devices employed to determine the level of cohesion present within them.

The findings from the study indicated that all the texts exhibited reiteration patterns and zigzag patterns in terms of thematic progression. However, multiple thematic patterns were exclusively observed in texts authored by high-achieving students. Moreover, diverse cohesive devices, including lexical cohesion, conjunction, reference, and ellipsis, were employed to establish cohesion within the texts. While the theme system within systemic functional linguistics (SFL) proved valuable in analyzing text cohesion and coherence, there has been limited research into the analysis of analytical exposition texts generated by ChatGPT. This study aims to fill this research gap by investigating the cohesion and coherence of analytical exposition texts produced by ChatGPT. It utilizes the systemic functional linguistics approach and draws upon the cohesive device theory proposed by Halliday and Hasan (1976).

Furthermore, it is crucial to acknowledge the inherent challenges students face in developing argumentative writing skills. This difficulty persists across various educational levels, including elementary, junior high, and senior high schools, as weak arguments within their papers hinder their ability to effectively persuade readers (Golder & Coirier, 1996, as cited in Fan & Chen, 2019). Additionally, Schleppegrell, as cited in Rustipa (2013:1), emphasizes that students are expected to master exposition text writing as they progress to higher education levels, particularly in high school and beyond. These exposition texts not only signify language acquisition progress but also serve as a measure of students' success in their academic journey. Yuliana & Gandana (2018) point out that expository writing such as analytical exposition text hold significant importance for language learners as a genre as a foundation to foster advanced writing skill. In line with this, Martin in Yuliana & Gandana (2018) believes that the skill of composing exposition text is highly valued, particularly in the context of higher education at the university level.

Therefore, this study analyses the extent of cohesion and coherence generated by ChatGPT in creating analytical exposition articles. As previously discussed, coherence and cohesion in texts are essential elements in ensuring that messages and arguments are well-understood by readers. ChatGPT, being a cutting-edge AI system capable of generating text automatically, holds significant potential in assisting writers in creating coherent and cohesive texts. With its ability to understand context and produce text relevant to the given topic, ChatGPT can be a valuable tool in composing analytical exposition articles that blend arguments effectively.

However, like any technology, the use of ChatGPT also presents its challenges. Although it can produce linguistically coherent text, ChatGPT may need adjustments to ensure that the messages conveyed in analytical exposition articles remain well-organized and easily comprehensible to human readers. This might need deeper examination toward text generated by ChatGPT. Thus, comprehensive study is needed to see whether texts generated by Chat-GPT have met the criteria of the writing standard in terms of their cohesion and coherence. The significance of this research lies in the potential of utilising technologies like ChatGPT to aid writers, especially Indonesian students, in developing their writing skills, including in the creation of analytical exposition articles that require strong cohesion and

coherence. Thus, this study can serve as an initial step in exploring the extent of ChatGPT's contribution to enhancing writing abilities and writing models at the higher education level in Indonesia.

METHOD

Since this study concerned with the analysis of documents in the form of texts, this study employed a qualitative method with a case study approach. Prihatsanti et al. (2018) explains that case study research involves a detailed investigation data collection carried out on time period, phenomenon, and context specific aim to provide analysis of context and processes related to current theoretical issues being researched. In this study, as many as 9 analytical exposition texts generated by AI Chat GPT were used in this study. The process of the data collection can be described as follows.

First, the researchers determined the topics and the prompts for the system so all the texts were generated from the same instructions. The prompts were: 1). Write an essay of analytical exposition about frugal living in 300 words. 2). Write an essay of analytical exposition about smoking in 300 words. 3). Write an essay of analytical exposition about fast fashion in 300 words.

Second, the first text that has been generated by ChatGPT was saved and the researchers had the application to regenerate 3 times. Therefore, for each topic, there were 3 texts generated. Finally, from three topics, 9 texts were selected and collected to be analysed. The texts were analysed using systemic functional linguistics that encompassed types of cohesive devices according to Halliday and Hasan's (1976) five cohesive devices, which were reference, reiteration, ellipses, lexical cohesion, and conjunction and the analysis of Theme progression patterns. The analysis was conducted in several steps.

The first step was that the sentences were broken down into clauses. Since there were no grammatical errors found, the analysis went to the second step which was identifying the generic structure and the social purpose of the texts. Furthermore, the cohesive devices used in the texts were investigated. To examine the cohesion and coherence at the clause and text levels, finally, the texts were analysed in terms of Theme and thematic progression pattern. The steps of the analysis involves:

1. Identifying the Theme and Rheme by underlining them.
2. Classifying the types of Themes in the table.
3. Describing the dominant type of Theme from text generated.
4. Counting the percentage of each type of Theme, and conclude.

The formula of this study was:

$$X = \frac{F}{N} \times 100$$

X = the percentage of the obtained items

F = frequency

N = the total number of items

RESULT

The Generic Structure of the Texts

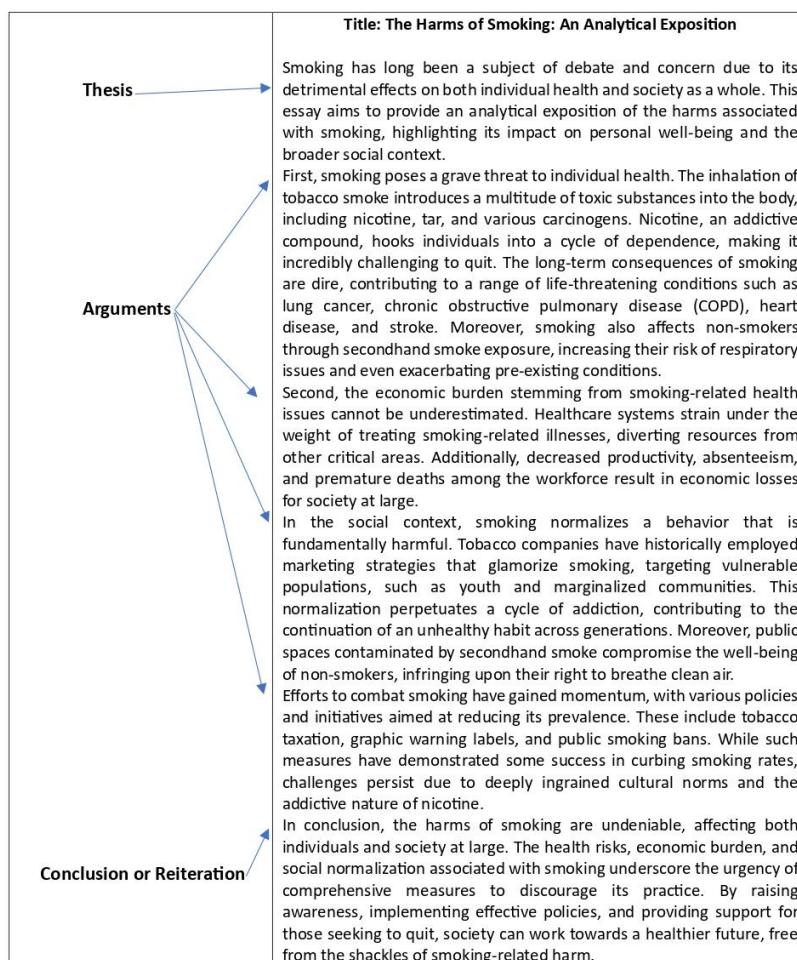
The texts produced by AI ChatGPT contained analytical exposition texts that encompass three different topics namely Frugal Living, Smoking, and Fast Fashion. Table 1 below illustrates the title of each exposition text.

Table 1. Texts generated by ChatGPT

| No | Title |
|----|---|
| 1 | The Art of Frugal Living: Embracing Simplicity and Sustainability |
| 2 | Frugal Living: A Pragmatic Approach to Financial Well-being |
| 3 | Embracing Frugal Living: A Path to Financial Freedom and Sustainability |
| 4 | The Harms of Smoking: An Analytical Exposition |
| 5 | The Destructive Habit: Analyzing the Detriments of Smoking |
| 6 | The Detrimental Impact of Smoking: An Analytical Exposition |
| 7 | The Perils of Fast Fashion |
| 8 | The Impact of Fast Fashion: An Analytical Exposition |
| 9 | The Impact of Fast Fashion: An Analytical Exposition |

There are three generic structures in analytical exposition text. Those are thesis statements, arguments and reiteration (Anderson and Anderson, 1997)). The thesis introduces the topic and indicates the writer's position. The arguments consist of points of the main argument and the development of the argument elaborated with supporting ideas and examples. The last structure, reiteration (restatement), restates the writer's position. From all texts above, it is found that each text has all structures of the exposition text.

Figure 1. The generic structure of Analytical Exposition Text



The Realization of Cohesive Devices in Analytical Exposition Texts

This section describes the amount and percentage of the use of cohesive devices in the analytical exposition texts produced by ChatGPT. Total and percentage of use of the cohesive devices were obtained from the analysis of the 9 exposition texts. Based on the results of the analysis, the results are presented in the following table.

Table 2. Cohesive device used in all text

| Text | Cohesive devices | | | | | Total |
|---------------|------------------|----------|--------------|---------|-------------|-----------|
| | Reference | Ellipsis | Substitution | Lexical | Conjunction | |
| Text 1 | 18 | 3 | 2 | 9 | 9 | 41 |
| Text 2 | 4 | 1 | 5 | 1 | 6 | 17 |
| Text 3 | 5 | 2 | 13 | 2 | 3 | 25 |
| Text 4 | 10 | 2 | 5 | 4 | 8 | 29 |
| Text 5 | 9 | 5 | 6 | 2 | 11 | 33 |
| Text 6 | 5 | 2 | 4 | 13 | 9 | 33 |

| | | | | | | |
|---------------|-------------------|----------------|-----------------|-----------------|-------------------|------------|
| Text 7 | 7 | 3 | 1 | 6 | 9 | 26 |
| Text 8 | 3 | 2 | 5 | 10 | 7 | 27 |
| Text 9 | 10 | 3 | 3 | 5 | 7 | 28 |
| Total | 71 (27,4%) | 23 (9%) | 44 (17%) | 52 (20%) | 69 (26,6%) | 259 |

The table above presents the results of the analysis carried out on the exposition text produced by AI in terms of its cohesive devices. After all data is analyzed, it is found that the number of cohesive devices used in AI-produced text is as much as 259. The use of cohesive devices in text totalling 259 with detailed descriptions as follows.

The use of cohesive devices of Reference is 71 (27,4%) and cohesive devices of Ellipsis is as much as 23 (9%). In addition, Substitution constitutes 44 (17%), meanwhile the Lexical cohesion is as much as 52 (20%) and the last is the cohesive device of conjunction is as much as 69 (26,6%). The results analysis of the AI-produced texts indicates that the use of cohesive devices which can be seen from the percentage of appearance most of them are reference, lexical cohesion, conjunction, substitution, and ellipsis.

1 Reference

As shown in Table 2, reference in nine analytical exposition texts generated by AI ChatGPT was the first most frequently used cohesive device (27.4%). Personal references, comparatives, and demonstratives were used in all essays. The details regarding the use of each item are presented in Table 3. All texts analyzed displayed a preference for employing personal references (43.7%) and demonstrative references (38%) over comparative references (18.3%).

Table 3. The Realization of Reference

| Types of Reference | Nine Texts | |
|--------------------|------------|-------------|
| | <i>f</i> | % |
| Personal | 31 | 43.7% |
| Demonstrative | 27 | 38% |
| Comparative | 13 | 18.3% |
| Total | 71 | 100% |

Since the prompts used for generating the texts did not mention the writer's point of view, the personal reference in the text shows mostly about possessive adjectives and noun reference. As for the demonstrative reference, the demonstrative pronoun "This" and the definite article "The" was frequently written. Meanwhile, the comparative reference was the least number of occurrences where they were mostly about comparing adjectives. The examples of personal, demonstrative, and comparative reference in the texts are seen as follows.

- (1) “**Smoking** has long been a subject of debate and concern due to **its** detrimental effects on both individual health and society as a whole.” (Text 4, sentence 1)
- (2) “Many fast fashion brands outsource production to countries with **lower labor costs**, potentially leading to exploitative working conditions and inadequate wages for workers. **This** raises ethical concerns about the treatment of the labor force ...” (text 9, sentence 10 and 11)
- (3) “Governments, non-governmental organizations, and individuals should collaborate to enforce **stricter** regulations on tobacco advertising, ...” (Text 6, sentence 17)

2 Conjunction

Conjunction becomes the second frequently used cohesive device identified in the texts with the percentage of 26.6%. The realization of conjunction as a cohesive device identified in nine texts is presented in the following table.

Table 4. Conjunction used in all text

| Sub Category | Tie Type | Nine Texts | |
|--------------|---------------------------|------------|-------------|
| | | <i>f</i> | % |
| Extension | Additive | 15 | 21.73% |
| | Adversative | 10 | 14.49% |
| | Varying | 6 | 8.6% |
| Enhancement | Causal-Conditional | 19 | 27.53% |
| | Comparative | 8 | 11.59% |
| | Matter (Positive) | 6 | 8.69% |
| Elaboration | Appositive (Exemplifying) | 5 | 7.24% |
| Total | | 69 | 100% |

Table 4 illustrates Halliday & Matthiessen’s (2014) categorization of the types of conjunctions, namely extension, enhancement, and elaboration and the table present the total conjunctions identified in the texts generated by AI ChatGPT. The data reveals that the most frequently employed conjunction in the texts was "enhancement," accounting for a significant 47.81% of all conjunctions. In the enhancement category, Causal-conditional occurred 19 times with typical words found in the texts were “Although”, “So”, “Because”, “Therefore”, Comparative for as many as 11.59% (Also, Similarly), and Matter (Here). Within the category of extension (44.82%), the additive conjunction “and” was the most frequently used. Other examples of additive conjunction identified in the texts were “Also”, “Moreover” and “Furthermore” that appeared 1 or 2 times in each text. The example of Adversative type of extension frequently emerged was “However” that appeared 9 times in the texts and “but” appeared 1 time. Meanwhile, the causal-conditional examples from the texts were Simple (Because), Sequential (First and foremost, Second), and Conclusive with “In conclusion” that was used in all texts. Elaboration was the least sub-category of conjunction that occurred five times (7.24%) with the example word from the texts “For example” and “At least”.

3 Lexical Cohesion

The second frequently used cohesive device of the texts generated by AI Chatbot, was lexical cohesion with the percentage of 20%. The most subcategory used of the lexical cohesion device was repetition that occurred 38 times. The repeated content words were related to the topic of the essay that was given as the prompts. The most repeated word that was written in the texts was the word that became the topic of the essay, for instance, “Frugal Living”, “Smoking”, and Fast Fashion”. Other subcategory of the lexical cohesion was synonym (12 times) that can be found in the texts such as diseases and illness, passive smoking and secondhand smoke, society and community.

4 Substitution and Ellipsis

Substitution and ellipsis were seldom observed in the 9 analytical exposition texts. According to Halliday and Hasan (1976), these linguistic devices are more commonly used in spoken language rather than in written communication. However, this does not mean that they cannot be employed in written discourse. Table 6 provides an overview of how substitution and ellipsis were used in the texts generated by AI ChatGPT.

Table 5. The Realization of Substitution and Ellipsis in the Texts

| | Nine Texts | |
|---------------------|------------|------|
| | <i>f</i> | % |
| Substitution | 33 | 14% |
| Ellipsis | 23 | 9.4% |

The example of substitution and ellipsis identified in the texts are presented in the following sentences:

- (1) “This essay explores the principles and benefits of frugal living, highlighting **its** potential to foster financial stability and contribute to a greener, more sustainable future.” (Text 1, sentence 3)
- (2) "Efforts to curb smoking have led to various measures, including public awareness campaigns, graphic warning labels on cigarette packs, and increased taxation on tobacco products." (Text 5, sentence 12)

In the example 1 (text 1, sentence 3), the word "its" is a substitution that points to "frugal living.". It creates cohesion that avoids repetition of the phrase "frugal living" and clarifies that the benefits belong to the concept mentioned earlier. As for ellipsis in the example 2, the ellipsis there omits the repetition of the subject "efforts to curb smoking”.

Theme Selection and Theme Progression Consistency

1 Theme Selection Consistency

The concept of "Theme" can be divided into two categories: "simple Theme" and "multiple Theme." "Simple Theme" comprises the experiential elements, including participants, circumstances, or processes, which relate to the topical Theme, as defined by Halliday & Matthiessen (2014, p. 105).

Additionally, other elements may occur before the topical Theme, encompassing textual, interpersonal, or a combination of both. In this finding, all texts written by AI ChatGPT employ topical and textual themes (277 times). The dominant theme across all texts is the unmarked topical theme that emerged as many as 204 times. Table 6 depicts the distribution of Topical theme and Textual theme in nine texts.

Table 6. The distribution of Themes

| Text | Topical Theme | Textual Theme | Interpersonal Theme |
|--------------|---------------------|--------------------|---------------------|
| Text 1 | 24 | 10 | 0 |
| Text 2 | 21 | 7 | 0 |
| Text 3 | 23 | 6 | 0 |
| Text 4 | 22 | 7 | 0 |
| Text 5 | 23 | 7 | 0 |
| Text 6 | 22 | 6 | 0 |
| Text 7 | 23 | 5 | 0 |
| Text 8 | 24 | 10 | 0 |
| Text 9 | 22 | 5 | 0 |
| Total | 204 (76.40%) | 63 (23.60%) | 0 |

Table 7. The realization of Topical theme

| Text | Topical Theme | | | |
|--------------|---------------|-------------|------------|-------------|
| | Marked | | Unmarked | |
| | <i>f</i> | % | <i>f</i> | % |
| Text 1 | 5 | 15.15% | 19 | 11.11% |
| Text 2 | 5 | 15.15% | 16 | 9.35% |
| Text 3 | 7 | 21.21% | 16 | 9.35% |
| Text 4 | 2 | 6.06% | 20 | 11.69% |
| Text 5 | 3 | 9.09% | 20 | 11.69% |
| Text 6 | 3 | 9.09% | 19 | 11.11% |
| Text 7 | 6 | 18.18% | 17 | 9.94% |
| Text 8 | 1 | 3.03% | 23 | 13.45% |
| Text 9 | 1 | 3.03% | 21 | 12.28% |
| Total | 33 | 100% | 171 | 100% |

Table 8. The overall theme in the texts

| | Topical Theme | | | | Textual Theme | |
|----------------|---------------|---------------|------------|---------------|---------------|---------------|
| | Marked | | Unmarked | | <i>f</i> | % |
| | <i>f</i> | % | <i>f</i> | % | | |
| 9 Texts | 33 | 12.36% | 171 | 64.05% | 63 | 23.59% |

As illustrated in the table 6, the topical/ideational Theme found in the texts is frequently used by AI ChatGPT (76.40%) followed by the textual Theme (23.60%), and interpersonal Theme does not emerge in all texts (0%). Based on table 7, the marked topical theme contained 11 adverbial, 22 prepositional phrases in the 9 texts. There were 33 marked topical themes in total. However, most of the themes in the texts used unmarked topical theme as the departing points. There could be found 84 nouns, 14 pronouns, 45 noun phrases, 28 referential, and 0 existential.

The example of marked and unmarked theme from the texts is as follows:

- (1) Marked Topical Theme: *Adverbial*

In today's fast-paced and consumer-driven world, the concept of frugal living has gained traction as a response to mounting financial pressures and environmental concerns. (Text 1, sentence 1)

- (2) Marked Topical Theme: *Prepositional Phrase*

By raising awareness, implementing effective policies, and providing support for those seeking to quit, ... (Text 4, sentence 20)

- (3) Unmarked Topical Theme: *Noun as the theme*

Smoking has long been a subject of debate and concern due to its detrimental effects on both individual health and society as a whole. (Text 4, sentence 1)

- (4) Unmarked Topical Theme: *Pronoun as the theme*

Many find themselves trapped in a cycle of debt as **they** struggle to keep up with the ever-changing fashion landscape. (Text 8, sentence 12)

- (5) Unmarked Topical Theme: *Referential*

This could include repurposing items, DIY projects, or finding cost-effective solutions to everyday challenges. (Text 3, sentence 9)

The textual theme was identified with the total frequency of occurrence 23.60%. From the texts, the conjunction, conjunctive adjunct and continuative commonly realized as the textual theme. Below are examples of a textual theme that appeared in the text.

- (1) The journey towards frugality may require discipline and adjustment, **but** the rewards of financial stability ... (Text 3 sentence 18)

- (2) **Additionally**, embracing slow fashion, characterized by timeless pieces, quality craftsmanship, and durability, can help reduce the negative impact... (Text 7, sentence 17)

- (3) **Moreover**, the economic burden of smoking on society is substantial, encompassing healthcare costs, decreased productivity due to illness, and premature deaths (Text 5, sentence 12).

2 Theme Progression Consistency in the Texts by AI

Thematic development in written texts can be classified into three patterns, as described by Eggins (2004). These patterns are the constant Theme/reiteration pattern, the zigzag/linear pattern, and the multiple-Theme pattern. Table 9 offers a visual representation of how these thematic development

patterns manifest in the analytical exposition texts generated by AI ChatGPT. The reiteration pattern is mostly used (28 patterns) followed by the zigzag pattern (23 patterns). The example of the Reiteration and the Zigzag pattern is presented in Figure 2 and 3.

Table 9. Theme Pattern Consistency

| Text | Paragraph | Theme progression | | |
|--------|-----------|-------------------|--------|----------------|
| | | Reiteration | Zigzag | Multiple-theme |
| Text 1 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | | ✓ | |
| | 4 | | ✓ | |
| | 5 | ✓ | | |
| | 6 | ✓ | | |
| Text 2 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | | ✓ | |
| | 4 | | ✓ | |
| | 5 | | ✓ | |
| | 6 | ✓ | | |
| Text 3 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | | ✓ | |
| | 4 | | ✓ | |
| | 5 | | ✓ | |
| | 6 | ✓ | | |
| Text 4 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | ✓ | | |
| | 4 | ✓ | | |
| | 5 | | ✓ | |
| | 6 | ✓ | | |
| Text 5 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | | ✓ | |
| | 4 | | ✓ | |
| | 5 | | ✓ | |
| | 6 | ✓ | | |
| Text 6 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | ✓ | | |
| | 4 | | ✓ | |
| | 5 | ✓ | | |
| Text 7 | 1 | ✓ | | |
| | 2 | ✓ | | |
| | 3 | | ✓ | |
| | 4 | | ✓ | |
| | 5 | ✓ | | |
| Text 8 | 1 | ✓ | | |
| | 2 | ✓ | | |
| | 3 | ✓ | | |
| | 4 | | ✓ | |
| | 5 | ✓ | | |
| | 6 | ✓ | | |
| Text 9 | 1 | ✓ | | |
| | 2 | | ✓ | |
| | 3 | ✓ | | |

| | |
|---|---|
| 4 | ✓ |
| 5 | ✓ |
| 6 | ✓ |

Figure 2. Text written by AI with the Reiteration theme pattern

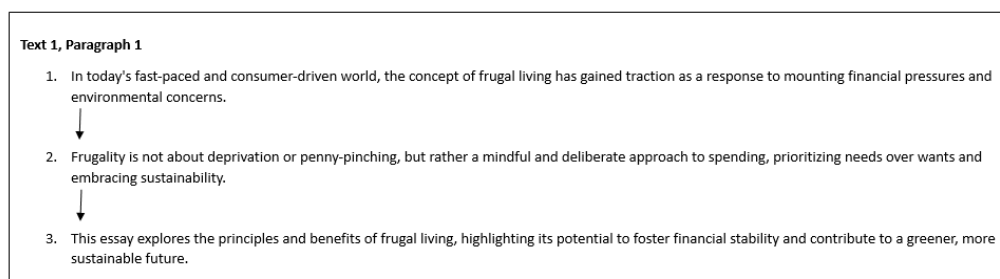
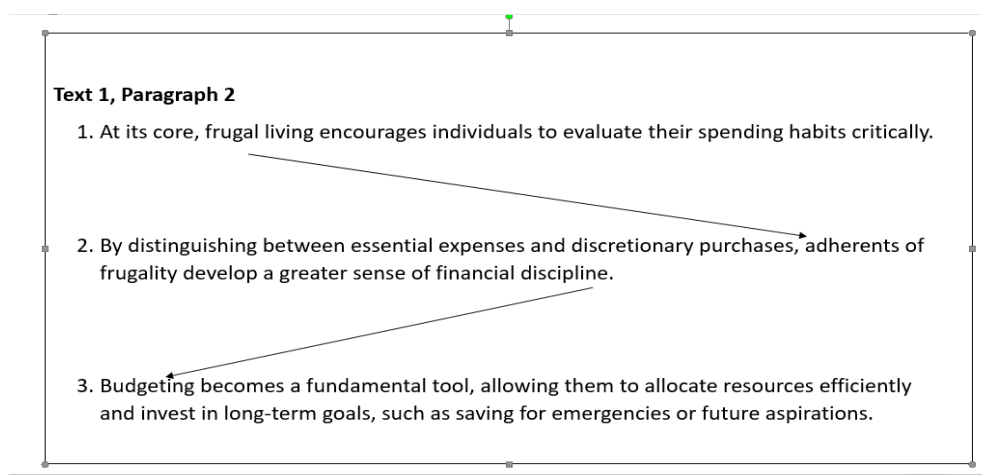


Figure 3. Text written by AI with the Zigzag theme pattern



DISCUSSION

The aforementioned findings show that Reference is the most frequently used 27.4% followed by Conjunction 26.6%. Another major cohesive device used in the texts is lexical cohesion 20% followed by substitution 17% and the least frequently used is ellipsis 9%. The abundant use of reference is considered a potential model for practice constructing an exposition text for students. A study by Rodliyah & Liani (2022) found that the student still lacks exposure to the use of reference devices that make them confused when composing a text. Thus, the AI-generated text can be taken into account. In terms of the use of conjunction, all texts generated by AI seem to have the tendency to use additive and causative conjunction and employ fewer other sub-type of conjunction.

Interestingly, this finding shares the similar results with the use of conjunction identified in the texts produced by people (Rodliyah & Liani (2022)). Repetition is widely used in the texts, possibly as

an attempt of the system to make the texts easier to be comprehended by the reader. The lower frequency of substitution and ellipsis can be linked to the fact that these cohesive techniques are more commonly found in spoken or dialogic contexts rather than in written discourse (see Emilia, Habibi, & Bangga, 2018 p.552).

The findings suggest that the texts written by AI have qualified the richness and variation of the texts because the text that it produces is coherent, lengthy, indistinguishable from human writing (Brown et al, 2020 in Woo, 2023). The AI-generated texts tend to have similar linguistic features, structure, and complexity. In line with this, Zhou et al (2023) revealed that ChatGPT performed better than human writers in narrativity, word concreteness, and referential cohesion. ChatGPT generates essays that receive higher quality ratings compared to human-authored essays, showcasing distinct linguistic traits in contrast to human-written essays (Herbold et al, 2023). Meanwhile, the texts produced by humans tend to have different qualities (Karadeniz, 2017). According to Karadeniz, A (2017), human writing quality is varied depending on educational background and their language proficiency level in terms of length of the text, cohesion, coherence, and consistency.

The results of the analysis indicate the implementation of Theme and Rheme theory which is a component of the Thematic structure in Functional Grammar, within the Analytical Exposition texts generated by AI ChatGPT. Theme is the point of departure for the message while the Rheme is the part which the Theme developed (Halliday and Matthiessen, 2014, p.89). The findings suggest the presence of two primary types of Themes employed in these texts. The dominant type of Theme used in 9 texts was Topical Theme with a total frequency of 204 (76.40%). The presence of the simple Theme, such as the topical Theme, as the most commonly employed Theme in the exposition texts is unsurprising. This can be attributed to the structural nature of clauses, where each clause typically contains a single topical Theme, which, in turn, manifests as a nominal group, adverbial group, or prepositional phrase (Halliday & Matthiessen, 2014, p.92).

The second dominant one was Textual Theme with the frequency of occurrence 63 (23.60%). Interestingly, there was no evidence of interpersonal themes in the AI-generated texts. This means that the AI ChatGPT used many declarative clauses and most of the clauses as a topical theme were started by word, mostly noun and noun phrase functioning as a subject and adjunct. In the process of analysis, the researchers also found the Marked and Unmarked Theme. There were 12.06 % Marked theme, while unmarked was 64.05 %. This meant there were more unmarked Theme used in whole exposition text by AI because they were presented by word or phrase as a subject. Meanwhile, the textual theme was identified with the total frequency of occurrence 23.60% primarily involving conjunctive adjuncts, and continuatives as common realizations of the textual theme. In argumentative texts analyzed, the conjunctive adjuncts were placed in the beginning of the clause because the texts attempted to persuade the readers by adding textual Theme before the topical Theme in order to link logical steps of their arguments (Meiarista, K, & Widhiyanto, W, 2020). The conjunction became the mostly used element

in textual Theme since it linked one clause to another clause. The textual function of language is an interpretation of language in its function as a message that is realized by theme.

As for the thematic structure of each clause has been analysed, the next step involves understanding how the Themes of these clauses are interrelated to ensure cohesion and coherence in the text. Investigating thematic development within each clause holds particular significance such as examining information flows and meaning structure to enhance comprehension (Martin & Rose, 2007, p. 198). Within this context, three distinct patterns of thematic development emerge: the constant Theme pattern, the zig-zag pattern, and the multiple-rhyme pattern, as outlined by Eggins in 2004 (pp. 324-325). The findings of this study reveal that the constant Theme pattern is the most frequently used, followed by the zig-zag pattern (refer to table 9). The high frequency of this pattern is often linked to the notion that "one basic way to keep a text focused (i.e. cohesive) is simply to re-iterate an element" (Eggins, 2004, p. 324). Meanwhile, the later pattern observed in the analytical exposition texts generated by AI is the zig-zag pattern. The presence of this pattern improves the cohesion of the text by introducing new information into the narration (Eggins, 2004, p. 325), creating a dynamic interplay of ideas and keeping the information flow in a clear manner by repeating the use of similar topical Theme (Emilia, Habibi, & Bangga, 2018 p.552).

For the pedagogical implication, the findings have shown that there is a potential relevance of the AI Chatbot usage in second language writing pedagogy. The tool demonstrated a systematic workflow that could be a model for learners and maximize the efficiency in composing writing especially in argumentative essays. Furthermore, the writing model generated by the AI, will be helpful for EFL English teachers especially for those who have lack access to the material sources.

CONCLUSION

The result of the analysis of generic structure, theme selection, theme progression, and cohesive devices showed that Chat GPT auto generative system is able to produce a rich coherence and cohesive devices analytical exposition text. The text has a variative types of conjunctions, themes-patterns selection and rhymes.

It is suggested that future research look into other genres of AI-generated texts besides analytical exposition. By looking at a range of text genres, it is possible to gain a deeper understanding of the advantages and disadvantages of AI in different linguistic and communicative contexts.

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