

AN ANALYSIS OF GRAMMATICAL COHESIVE DEVICES IN AN EXPOSITORY ESSAY WRITTEN BY AI WRITING TOOL ‘CHAT GPT’

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ABSTRACT

Artificial intelligence is the emerging field of the modern world with the ability to revolutionize the writing of various types and the advancement of AI has initiated the creation of unique tools that can help to write different discourses. The current study aims to identify the grammatical cohesive devices employed in an expository essay titled “Social Media: Blessings and Curses” written by one of the most popular artificial intelligence tools named ChatGPT. ChatGPT is a language model developed by OpenAI, Inc, California creating human-like discourse according to the prompt given to it. The study used Halliday and Hasan's (1976) cohesion theory as the theoretical framework. The research paradigm is qualitative and the descriptive content analysis has been used as the method of the study. The data for the analysis was the essay consisting of 558 words. The results indicated that the expository essay written by the AI tool named ChatGPT exhibited the efficient use of grammatical cohesion. The most used grammatical cohesive device was the anaphoric reference while no ellipsis was used. The research recommends to take help from this tool to teach students the concept of cohesion and coherence in academic writing.

Keywords: Cohesion, coherence, artificial intelligence (AI), expository

INTRODUCTION

Language is composed of four skills: speaking, writing, listening, and reading. For someone to become proficient in any language, including English, these four skills are crucial. All four languages skills has connection with emotions in form of expression (Javaid et al., 2023). Of all those linguistic skills, writing is thought to be the most challenging as it demands expertise and creativity (Fitriati & Yonata, 2017; Kilic, Genc, & Bada, 2016). Writing can be challenging for a variety of reasons, from word choice and syntax to spelling and punctuation to more complex issues like coming up with ideas and organizing them logically and harmonically (Katrini & Farikah, 2015). Expressive writing can be very helpful in expressing oneself (Javaid & Mahmood, 2023). In other words, there are certain factors to be kept in mind when it comes to writing different types of texts, and cohesion is one of those elements. Cohesion is the relationship of meaning of one item with another item or items in the text or discourse, just like other semantic relations like synonymy, antonymy, and polysemy. The term cohesion is defined by Halliday and Hasan (1976) as the

relationships between meanings in a text and is manifested through the text's hierarchical structure. It happens when one way to understand a text depends on how another part is understood. According to Taboada (2004) cohesion means the internal connection of the text. Yule (2008) defines cohesion as the thread and connection that run through the text. It is a component of a linguistic system; a kind of intra-sentence relationship between an item and the item(s) in the text that come before or after it. Cohesion in the communication activity reveals how the writer organizes the ideas they wish to express.

Talking about coherence, a text is composed of phrases that are placed in their proper context in addition to being an ordered string of words. In general, coherence refers to how the statements appear in the text within their context. More precisely, comprehension of the meaning or message depends on how well-suited the text is for its environment. Taboada (2004) defines coherence as the ability of a text to make sense in respect to its situational or cultural context. According to Yule (2008), coherence is the ability for everything

to fit together harmoniously. It is a quality that people possess rather than something that can be found in words or structures. The way the audience and the text relate to each other determines how coherent the interpretation of the text's meaning is (Tanskanen, 2006). Therefore, a text's coherence can only be understood if the recipient has adequate background information to understand how the discourse's messages relate to one another.

The last decade has witnessed a revolutionized research and innovation in the use of artificial intelligence for educational contexts (Hwang et al., 2020). A systematic review revealed that AI has impact on language learning (Javaid et al., 2024). Especially, natural language processing is the main field that is mostly employed in various educational activities (Chen et al., 2020). In this borderless world, various changes have taken place in the domain of academic writing. This era has witnessed the involvement of different tools in the field of academic writing such as artificial intelligence, digital resources, great improvements in the existing structures, and different types of media (Purwantiningsih & Suharso, 2019). This provides a range of effects pertaining to the viewpoints of the users. Artificial intelligence has the potential to enhance creativity and lower a researcher's moral standards when it comes to using technology (Gunawan, Liliarsari, Kaniawati, & Setiawan, 2021).

An essay is a brief nonfiction written piece with the purpose of educating the reader on a subject or supporting a specific viewpoint. Three crucial sections make up an effective, well-organized essay: the introduction, the body, and the conclusion. The introduction, which usually consists of one paragraph, establishes the context for your essay. It should pique the reader's interest and make it apparent to them what the topic of your essay will be. The second part is body of the essay. You go into greater detail about your subject and provide your arguments and supporting data in the body. Generally speaking, it has two paragraphs, however, this can change according on the kind of essay you're writing. 3. The conclusion, which usually consists of one paragraph, wraps up your essay. It should provide the reader with a brief summary of the essay's key ideas and food for thought. There are different types of essays: narrative essay, descriptive essay, argumentative essay, and expository essay. Writing a narrative

essay entail narrating a tale, frequently one that is based on the author's experiences. It's a type of creative nonfiction where you can express a theme or message through storytelling techniques. By employing sensory adjectives, a descriptive essay seeks to provide the reader a fully immersive experience. A descriptive essay is more focused on one component of a story and has a smaller scope than a narrative essay, which narrates a story. One of the most popular types of college essays is the argumentative essay, which seeks to persuade the reader to take a position based on solid evidence. Exams in schools and colleges frequently utilize the expository essay format to gauge your comprehension of a certain subject. An expository essay's goal is to thoroughly discuss and investigate a subject without endorsing any side or voicing personal beliefs (Alarcon and Morales, 2011).

This study attempts to explore the elements of cohesion and coherence in the expository essay written by the artificial intelligence software named ChatGPT. An expository type of essay is a type of writing where students must research a concept, assess supporting information, elaborate on the concept, and clearly and succinctly present an argument. This can be achieved by cause-and-effect analysis, definition, example, and comparison and contrast, among other methods. The five-paragraph format is a popular way to write explanatory essays. That being said, there are other ways to write these kinds of essays besides this one. If it sounds simple, that's because it is; the steps in the process are as follows: an introduction, three body paragraphs with supporting evidence and an end.

English being lingua Franca holds the most important place when it comes to learning a language. When learning a language, there needs a mastery of all four language skills: listening, reading, speaking, and writing. Writing is the most complex skills to master and essay writing is an art. Essay has a complex structure and the most challenging thing is to keep the essay coherent using different cohesive devices. Various cohesive devices like references, conjunctions, substitution, and ellipsis. With the advancement of artificial intelligence tools, the skill of writing is not that challenging now as tools like ChatGPT can create any form of written text for their users. However, whether this written piece uses cohesive devices like human written texts or not, is still not

researched. The researcher tries to fill this gap by analyzing an essay written by ChatGPT for various cohesive devices leading to the overall coherence.

Research Questions

1. What kinds of grammatical cohesive devices have been used in the expository essay titled "Social Media: Blessings and Curses" written by ChatGPT?
2. How has the coherence been achieved in the expository essay titled "Social Media: Blessings and Curses" written by ChatGPT?

Research Objectives

1. To identify the grammatical cohesive devices in the expository essay titled "Social Media: Blessings and Curses" written by artificial intelligence tool named ChatGPT
2. To investigate the coherence in the expository essay titled "Social Media: Blessings and Curses" written by artificial intelligence tool named ChatGPT

Literature Review

Connor (2009) studies cohesiveness and coherence in ESL learners' writing comparing it with the write-up of native English speakers. The coherence theory proposed by Halliday and Hasan (1976) was applied to assess six essays on argumentative assignments collectively. Using holistic ratings and an interactive text analysis grounded in speech act theory, the coherence of the essays was assessed. The study's findings demonstrate that coherence was not necessary for an ESL essay to be cohesive. Moreover, it was discovered that general cohesiveness density did not distinguish between native speakers and ESL writers. However, it was discovered that the ESL writers lacked the range of lexical coherent strategies employed by the native speakers. In terms of coherence, the writing of ESL learners lacked: 1) sufficient reasoning behind claim assertions; and 2) sufficient connecting concluding statements to earlier problem subtopics.

Kuo (1995) examines the language, sentence structure, and informational organization of academic texts in relation to cohesion and coherence. According to lexical cohesive analysis, sentences that are more functionally significant to a text's thematic development typically have stronger cohesive connections with other sentences

than sentences that are less functionally significant. Even grammatically correct phrases might convey distinct meanings within a text at the sentence level. Additionally, the patterns of given/new information in paragraphs with different rhetorical roles are recognized. Students must hone their pragmatic competence in a variety of academic genres and information unit kinds with relation to the structuring of information. Vocabulary engagement has impact of multi- language usage (Ikramullah et al., 2023).

Ahmed (2023) conducted a study to explore the convenient and reliable process for the translation and interpretation of poetry. This study plays vital role in helping the interpreters to check the validation of their personal interpretations and give them access to the proper translators for the assessment of translation 's quality. The researcher sets some questions to be answered in research: How to verify the deep Structure meaning of poetry? How to assess the poetry's translation with validity? The researcher considers s De Beaugrande's and Dressler's (1981) textual analysis of coherence and cohesion as the most valid method for keeping the hypothesis of research. For the assessment, three poems in English language were chosen from the Poetry collection of Nineteenth century, inspired by Ancient Egypt, modified by Donald P. Rayan (2007) and their Arabic translation by Mohammed Ananī (2015). Initially the deep meaning of these three poems was analyzed with the help of coherence and cohesion in both source and targeted versions of poems. The cohesion and coherence between both source and targeted poems were analyzed, resulted with the finding that cohesion and coherence play vital role in assessment of translation and particularly in revealing the deep underlying meanings of poetry. The cohesion and coherence analysis are the most valid method for interpretation and understanding the meaning conveyed by figurative diction and deep concepts in poetry.

Another study was undertaken with the aim of demonstrating the inherent significance and purpose behind the selection of songs in contemporary elections, highlighting their correlation with the prevailing political context in which they are employed. The researcher conducted an analysis of the official campaign songs associated with Republican and Democratic

candidates from 1972 to 2016. The objective was to determine whether the lyrical content of a particular song exhibited a congruent or incongruent relationship. This analysis was conducted using a modified version of Sellnow and Sellnow's rhetorical perspective known as the "Illusion of Life." The study's findings have shown that politicians from both the Republican and Democratic parties have employed congruence in their song choices. Additionally, they tend to choose songs that possess positive and patriotic tones. Conversely, their Democratic counterparts tend to select songs that have critical elements towards the nation. (Peterson, 2018). Music language has effect on experiences and emotional engagement and language challenges causes stress (Javaid et al., 2024).

In this regard, a research study was conducted with the objective of showcasing Pakistani Prime Minister Imran Khan's rhetorical and persuasive techniques in his victory speech. This was qualitative research and it was based on Aristotle's Theories; Pathos, Ethos, and Logos. The results revealed that Imran Khan employed positive forecasting, self-appraisal, and unfavorable portrayals of opposition parties to persuade the people to embrace his political agenda. (Summaya, A., & Ahmed, H., 2021). Another study on Imran Khan's speech has analyzed that it may persuade common people to has positive interests. Further social media has great influence and information can be sensitised (Ramzan et al., 2023; Iqbal et al., 2024).

Methodology

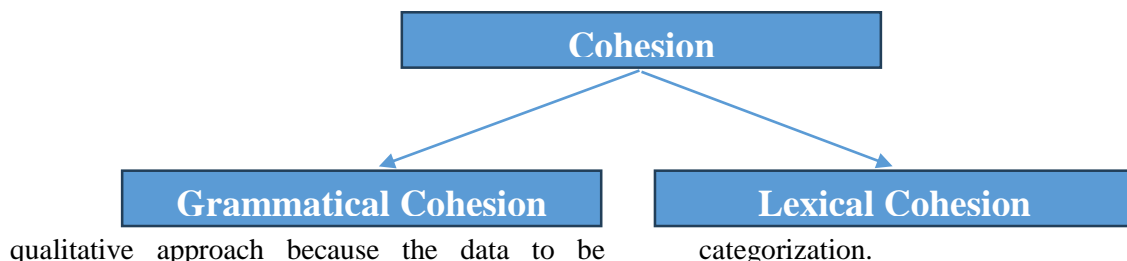
The methodology chapter explains the theoretical framework to be used in the study, research paradigm, data collection technique, and method used for the analysis of the data in the research study. The research paradigm for this study is

investigated is in the form of words, phrases, clauses, and sentences. The data for this study is the expository essay written by the ChatGPT, an artificial intelligence software. The prompt "Social Media: Blessings and Curses" was given to the software and the software generated the essay within seconds. The essay consisted of 558 words and the essay was divided into three parts: introduction, body and conclusion. The body was composed of six paragraphs and both introduction and conclusion had one paragraph each.

The descriptive content analysis has been used as the method of the study as it examines the text of the expository essay written by the artificial intelligence tool named ChatGPT on the topic "Social Media: Blessings and Curses". Content analysis is a research technique that analyzes the data in the form of text as the data is an academic essay following expository format. This data was then analyzed and explained to elicit its meaning, connectivity, and continuity in the ideas stated in the essay (Stake & Bowen, 2009). The paragraphs in the essay were read thoroughly highlighting the grammatical cohesive devices. To interpret these devices, the researcher concentrated on the pattern the ideas were presented and disseminated to the audience. This logical connection between the ideas proceeds further to the overall coherence of the text. The analysis of the text was categorized into various steps. Firstly, the paragraphs were broken into the sentences and secondly each sentence was analyzed individually to get the cohesive devices leading to the overall coherence.

Theoretical Framework

The current study employs the Halliday and Hasan's (1976) cohesion theory as the theoretical framework. According to this theory, cohesion is divided into two types: grammatical cohesion and lexical cohesion. Image 1 shows this



qualitative approach because the data to be

categorization.

Image 1: Halliday and Hasan's (1976) Cohesive Theory (Categories of Cohesion)

1. Grammatical Cohesion:

According to the theory of Halliday and Hasan, the grammatical cohesion is further categorized into

four components: reference, substitution, ellipsis, and conjunction.

Image 2 below shows these categories:

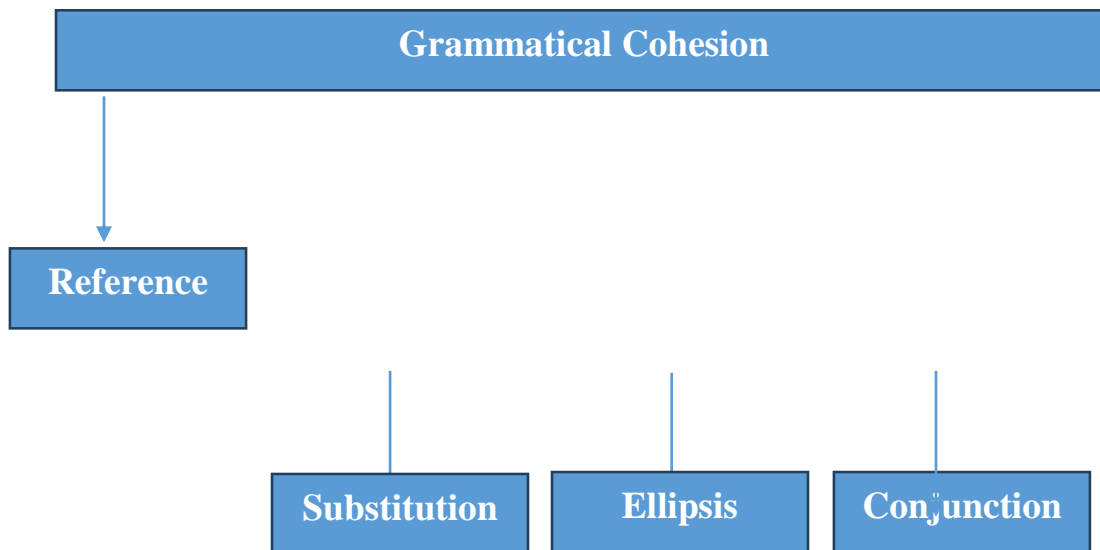


Image 2: Halliday and Hasan’s (1976) Cohesive Theory (Types of Grammatical Cohesion)

2. Lexical Cohesion:

Halliday and Hasan (1976) divide the lexical cohesion into two types: reiteration and collocation and image 3 shows these two categories:

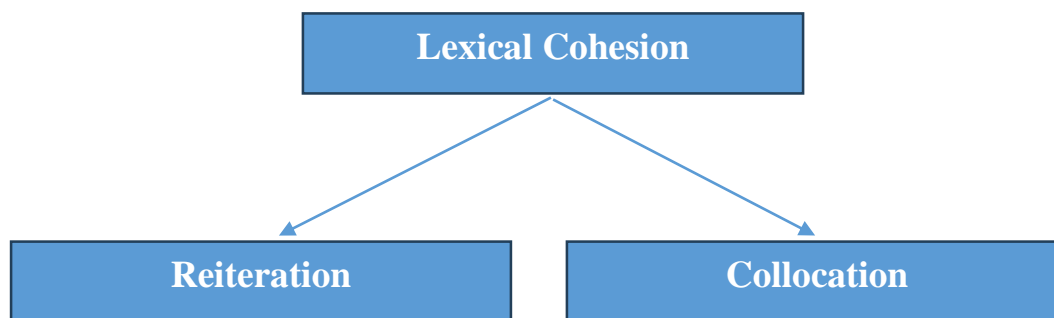


Image 3: Halliday and Hasan’s (1976) Cohesive Theory (Types of Lexical Cohesion)

For conducting this study, only grammatical cohesive devices will be explored.

Analysis and Interpretation
Grammatical Cohesive Devices

1. References

Anaphoric Reference

“In the digital age, social media has become an integral part of our lives”.

“It has transformed”

“It is curse.....”

The pronoun ‘it’ has been used as anaphoric reference for the noun ‘social media’.

“One of the most significant advantages of social media”

“Its ability....”

“It has bridged....”

“It allows.....”

“Its advent.....”

The pronoun ‘it’ and possessive determiner ‘its’ have been used as anaphoric references to the noun ‘social media’.

“Social media serves as”

“It has facilitated.....”

The pronoun ‘it’ has been used as anaphoric reference to the noun ‘social media’.

“Allowing activists to.....”

“For their causes....”

The possessive determiner ‘their’ has been used as anaphoric reference to the noun ‘activists’.

“Another aspect of social media’s blessing is its potential-----”

The possessive determiner ‘its’ has been used as anaphoric reference to the noun ‘social media’.

“Enabling people to -----”

“At their own pace -----”

The possessive determiner ‘their’ has been used as anaphoric reference to the noun ‘people’.

“Users’ personal information without their concern”

The possessive determiner ‘their’ has been used as anaphoric reference to the noun ‘users’.

“Social media has undoubtedly _____”

“It also poses _____”

The pronoun ‘it’ has been used as anaphoric reference to the noun ‘social media’.

“The impact of social media largely _____”

“It is used -----”

“Its potential pitfalls _____”

“Its blessings _____”

“Its curses _____”

The pronoun ‘it’ and possessive determiner ‘its’ have been used as anaphoric references to the noun ‘social media’.

Cataphoric Reference

“Despite its advantages, social media also carries-----”

The possessive determiner ‘its’ has been used as cataphoric reference for the noun ‘social media’.

“These powerful digital tools”

The demonstrative determiner ‘These’ has been used cataphoric reference for the noun ‘tools’.

Exophoric Reference:

Our (3), we, some, other, us

The first-person possessive determiner ‘our’ has been used for three times as exophoric reference as

it refers to the audience not mentioned in the text.

The first-person plural subjective pronoun ‘we’ has been used as exophoric reference referring to the audience outside the text. The first-person plural objective pronoun ‘us’ has been used as exophoric reference referring to the audience outside the text. The indefinite pronouns some and other have been used as exophoric reference referring to the audience outside the text.

Homophoric Reference

There is no instance of homophoric reference in the essay denoting that the AI software did not target any particular culture.

2. Substitution

“The debate over ----- is a complex one”

The pronoun ‘one’ has been used as nominal substitution for the noun ‘debate’.

3. Ellipsis

No instance of ellipsis has been used in the essay text.

4. Conjunctions

And (21), that, or, whether, while, or

The most used conjunction in the text is coordinating conjunction ‘and’ which has been used for 21 times. Coordinating conjunction ‘or’ has been used for two times. The subordinating conjunctions that, whether, while have been used once only.

Discussion

The essay was analyzed for probing into grammatical cohesive devices and the analysis showed that the ChatGPT essay used grammatical cohesion features: references, substitution and conjunctions. Talking about the types of references, anaphoric reference, cataphoric reference and exophoric references were used in the essay while homophoric reference was not used in the text thereby showing that the text is not culture-specific as it has universal appeal. The next device used was substitution and only one type of substitution called nominal substitution was employed. Two instances of nominal substitution were employed where nouns were substituted with the pronouns.

No instance of ellipsis was used in the essay and it can be interpreted that ellipsis are more common in

spoken discourse as compared to the written text. The conjunctions were the last grammatical device used and the most used conjunction was coordinating conjunction while subordinating conjunctions were also used in the essay.

This analysis shows that the essay written by this AI tool is coherent as it has effectively used all the cohesive devices which make it a coherent whole. The objective of the research was to identify the cohesion in the essay written by AI as artificial intelligence has penetrated deep into the world in the modern era. A non-coherent essay does not achieve the purpose of academic writing as the connectivity of ideas is essential component. The most used cohesive device is anaphoric reference (Pronoun-noun) which is an element of grammatical cohesion.

Overall, cohesion and coherence are the most essential elements of expert academic writing and without any doubt, they are required to establish a connection among the audience and the author in a writing that is to be read. The findings of the current dissertation are consistent with the results of the prior study conducted by Bae (2001) correlating grammatical cohesiveness with the quality of writing. With the advent of artificial intelligence tools, the writing game is on another level as it has revolutionized the writing of academic texts.

Conclusion and Recommendations

It is an era of technological revolution and various innovations are taking place changing the world to a great extent. It has impacted the whole world and the most affected field is academic writing both in positive and negative aspects. Different types of tools are now available that help in the writing and all types of discourses can be created with the help of these tools. The current dissertation aimed to identify the cohesive devices that were being used in an essay of expository type with the title: "Social Media: Blessings and Curses" written by one of the most popular artificial intelligence tools named ChatGPT. ChatGPT is a language model developed by OpenAI, Inc, California creating human-like discourse according to the prompt given to it. The study used Halliday and Hasan's (1976) cohesion theory as the theoretical framework. The research paradigm is qualitative and the descriptive content analysis has been used as the method of the study. The data for the analysis was the essay consisting

of 558 words. The results indicated that the expository essay written by the AI tool named ChatGPT exhibited the efficient use of grammatical cohesion. The most used grammatical cohesive device was the anaphoric reference while no ellipsis was used. The research recommends to take help from this tool to teach students the concept of cohesion and coherence in academic writing.

To sum up, cohesion and coherence are the necessary features of expert academic writing and in fact, they are needed to create a connection among the readers and the writers in any piece of written text. The findings of the current dissertation are consistent with the results of the study conducted earlier by Bae (2001) correlating the use of grammatical cohesive devices with the quality of writing.

The study recommends to analyze cohesion and coherence in other types of essays like descriptive, narrative, argumentative and persuasive. This knowledge can make help the teachers, students and authors to learn the use of these devices with the aim to make any text coherent. Further, this analysis can be done on the paragraphs written by this tool to check for the use of cohesive devices. Apart from ChatGPT, other AI tools can also be used for analyzing these texts and a comparative study can also be carried out to identify the difference between different artificial intelligence writing tools.

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