

# LINGUISTIC VARIATIONS IN CHATGPT

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## Abstract

Artificial Intelligence (AI) has experienced exponential development in recent years. ChatGPT developed by OpenAI has succeeded in providing an important benchmark in language development models that are able to understand how humans think. With users reaching 100 million worldwide, chatGPT is considered capable of answering society's current needs for fast and accurate information. It is interesting to examine how linguistic variations include input from users and the feedback given. This research uses a case study method by entering linguistic variations as text input and looking at linguistic aspects of GPT chat responses. The research results show that overall, chatGPT is very dependent on user text input in providing feedback, the more complete the commands and information entered, the more specific the response given by chatGPT. Another finding was that chatGPT was able to produce responses with diction choices with academic and informative nuances, but on the other hand there was minimal variation in synonyms; and be able to understand and apply Indonesian language rules well and correctly in the resulting text.

Keywords: Language variation, Artificial Intelligence, ChatGPT

## INTRODUCTION

AI (artificial intelligence) has experienced very significant developments in recent years (Howard et al., 2023). One of the triggers was the presence of OpenAI with one of its phenomenal products, namely ChatGPT. ChatGPT is a natural language processing tool based on AI technology (Stokel-Walker, 2023). ChatGPT allows users to have conversations like humans and

various other forms of communication like chatbots. ChatGPT can answer questions and help users complete various tasks, such as writing emails, essays, code, and so on.

To date, chatGPT has been used by 100 million people worldwide (Duerte, 2023). Indonesia ranks 6th as the country with the most users, namely 3.98% (Robert & Cai, 2023). In fact, users of this system will reach 1 billion people by the end of

2024 and will continue to grow exponentially. Advanced statistics report that users are spread between 20-35 years old with diverse backgrounds and usage purposes (Robert & Cai, 2023). The great public interest in the advantages it offers, this technology has the potential to change various aspects of human life, especially related to how people search for and obtain information, how to communicate, to the economic sector related to the loss of jobs replaced by chatGPT and the like (Ali et al., 2023; Xue et al., 2023; Zhai, 2023).

Apart from the various advantages provided, the presence of text-based computer programs that use Natural Language Processing (NLP) technology which allows them to provide human-like responses with a high level of accuracy has also created various polemics in society. Especially in the field of education, chatGPT presents polemics at the ethical level (Allison, 2023; Shahriar & Hayawi, 2023), academic integrity (Cotton et al., 2023; Shiri, 2023), validity and reliability of the information produced (HS Kumar, 2023), and various other related issues. However, instead of being permissive, we must find a balance point between the use of NLP-based chatbots and educational values and research principles.

One aspect that makes chatGPT popular is the chat-based interaction pattern which allows users to provide follow-up responses to the responses given. This activity creates a sensation like communicating with humans, not with machines. This sensation is not obtained from search engines based on input keywords such as google.com, you.com, openverse, bing.com, and so on. This can also be interpreted that chatGPT has changed human behavior in searching for information on the internet.

The interactive text-based communication process indirectly demands the

user's linguistic abilities such as the ability to formulate questions, choose diction, and other linguistic variations which will be examined further in this research.

Diction variations are variations in the use of words and phrases in a particular language (Jayantini et al., 2021). Diction refers to the choice of words used to convey certain ideas, emotions, nuances, or styles in communication (Safaah et al., 2020). Diction variations are important for various purposes. Apart from that, the use of various words can also show the identity of the writer.

## **METHOD**

This research was conducted in a qualitative descriptive manner. This type of research aims to understand and describe phenomena in depth by focusing on descriptive and qualitative aspects. This method is used to collect and analyze non-numerical data, such as text, images, sounds, or field observations, with the aim of gaining a deep understanding of the subject under study (Patton, 2002). This research focuses on uncovering linguistic variations in the chatbot-based search engine service ChatGPT using the case study method. A case study is a detailed study of a specific subject, such as a person, group, place, event, organization, or phenomenon (Crowe et al., 2011). Case studies are suitable for describing, comparing, evaluating, and understanding various aspects of research problems (McCombes, 2023). Data collection using literature review and observation methods in the chatGPT application goes through the following steps, first create and determine variations of questions and statements that will be used as input. Second, enter the statements/ questions one by one. Third, collect chatGPT responses for further analysis.

## FINDINGS AND DISCUSSION

### General Structure

As a service with the main function of providing answers with a high level of accuracy based on user commands or text. In general, chatGPT works in 3 stages, name-

ly collecting data and training according to policies, comparing various types of data to create an ideal model, and optimizing the model, as shown in the following figure.

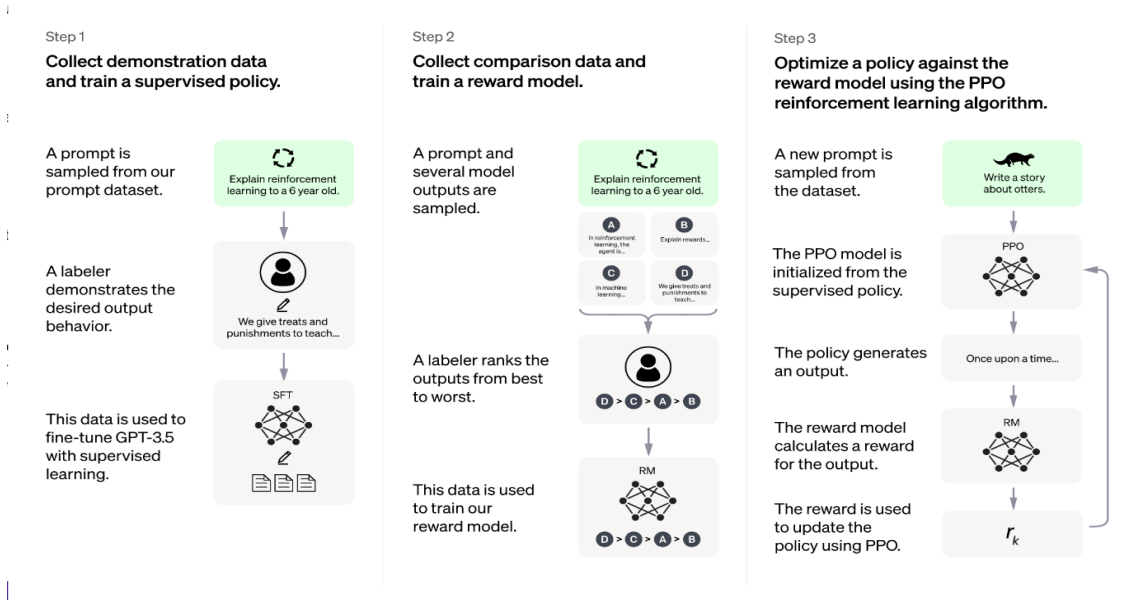


Figure 1. How chatGPT works (Guinness, 2023)

From the image above, it can be concluded that chatGPT applies the principles of AI, data processing ability, learning ability, decision making, adaptability, and pattern recognition (Floridi & Cowls, 2022). With this capability, humans will be completely dependent on chatGPT and similar applications in searching for information,

processing information, and making decisions.

ChatGPT is very sensitive to the text we enter. We have to make sure he understands what we want to ask. For example, when we enter the word "bahasa" then he will turn the question around to be able to provide a specific response.

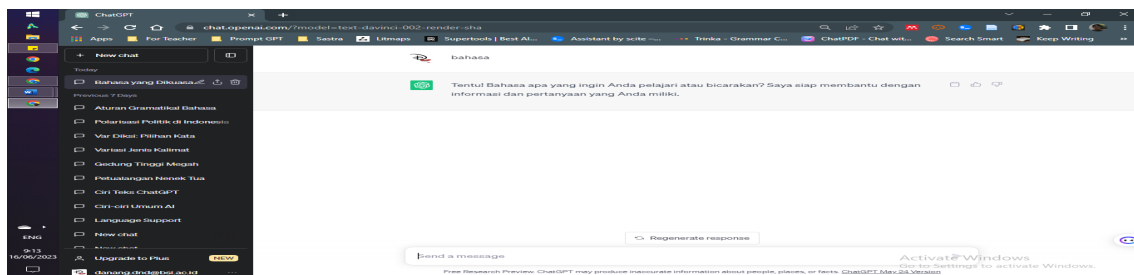


Figure 2. Response from ChatGPT

Furthermore, in general, chatGPT will provide responses in the 400-500 word range. This number is comprehensive enough to understand a concept of a terminology. Another characteristic is that the resulting text tends to be presented in bullet points with the aim of making it easier for users to understand the context more quickly. This means that chatGPT chooses

to use expository text type in responding to questions from users. However, chatGPT also has the ability to produce posts in various genres according to user requests.

Another interesting ability is producing creative writing in narrative form. However, the resulting story still seems stiff and relies heavily on the keywords the user enters.

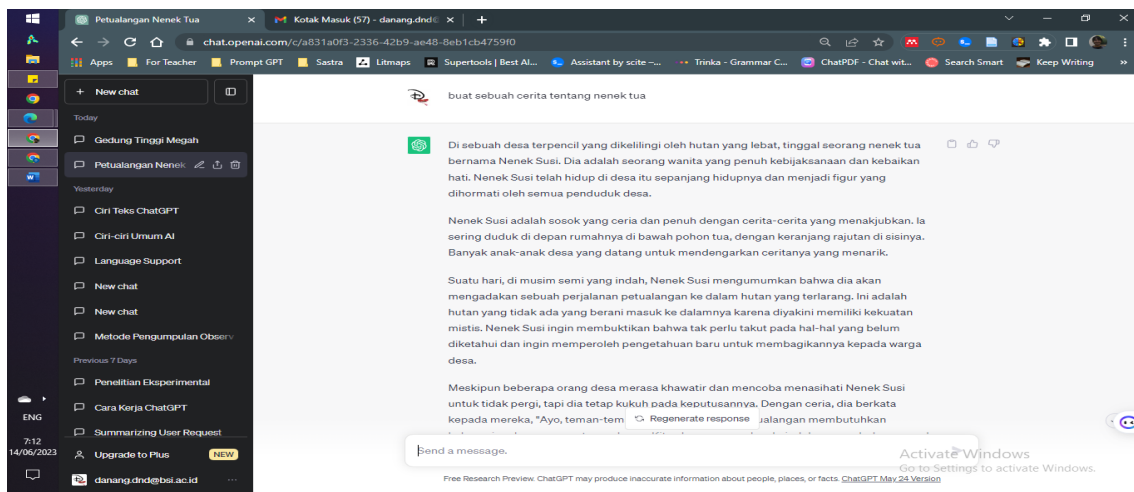


Figure 3. Response from ChatGPT

In the image above the user enters the command “buat cerita tentang nenek tua” (make a story about an old grandmother). Then, in the response given, chatGPT inserts each keyword input by the user into the story it creates. Then, to test whether the text was the result of creativity, we tried searching on other search engines such as google.com and bing.com to ensure originality. The result was that no text similar

to that produced by chatGPT was found. This shows that chatGPT can produce creative text naturally and original.

### Variations in Sentence Types

Next we want to see how chatGPT responds to various types of sentences such as declarative, interrogative, and imperative.

Table 1. responds to various types of sentences such as declarative, interrogative, and imperative.

No	Type of Sentence	Input Text	Information
1	Declarative	<i>Covid 19 berdampak terhadap pendidikan (+)</i>	<i>Ya, pandemi COVID-19 telah berdampak signifikan pada terganggunya kegiatan belajar di sekolah di seluruh dunia. Beberapa dampaknya antara lain:..... (poin-poin dampak)</i>
		Covid 19 has an impact on education (+)	Yes, the COVID-19 pandemic has had a significant impact on disrupting learning activities in schools throughout the world. Some of the impacts include:..... (impact points)
		<i>Covid 19 tidak berdampak terhadap pendidikan (-)</i>	<i>Maaf, tetapi pernyataan bahwa COVID-19 tidak berdampak pada terganggunya kegiatan belajar di sekolah tidak sesuai dengan fakta yang ada. Pandemi COVID-19 telah secara signifikan mempengaruhi sistem pendidikan di seluruh dunia. Berikut adalah beberapa dampak yang terlibat:...(poin-poin dampak)</i>
		Covid 19 has no impact on education (-)	Sorry, but the statement that COVID-19 has no impact on disrupting learning activities at school does not match the existing facts. The COVID-19 pandemic has significantly affected education systems around the world. Here are some visible impacts:...(impact points)
2	Interrogative	<i>Bagaimana dampak covid 19 terhadap pendidikan?</i>	<i>Pandemi COVID-19 memiliki dampak yang luas terhadap sistem pendidikan di seluruh dunia. Berikut adalah beberapa dampak yang terlibat: .....(poin-poin dampak)</i>
		How does Covid 19 impact education?	The COVID-19 pandemic has had a far-reaching impact on education systems around the world. Here are some visible impacts: .....(impact points)

3	Imperative	<i>Buat makalah tentang dampak covid 19 terhadap pendidikan!</i>	<i>Judul: Dampak COVID-19 terhadap Sistem Pendidikan: Tantangan dan Peluang</i>
		Write a paper about the impact of Covid 19 on education!	<i>I. Pendahuluan</i> <i>A. Latar Belakang ... (bab dan sub bab dalam penyusunan makalah)</i>
			Title: Impact of COVID-19 on the Education System: Challenges and Opportunities
			I. Introduction A. Background... (chapters and sub-chapters in the preparation of the paper)

From the table above it can be concluded that chatGPT's response to the positive declarative sentence input "Covid 19 has an impact on education" is to provide affirmation or agreement to the statement followed by other, more comprehensive information as support. Then we tried to insert a statement sentence but it had the opposite meaning to the existing empirical facts, namely "Covid 19 has no impact on education". Therefore, chatGPT provided a response not to agree with the statement followed by the reasons behind it. Then for interrogative and imperative sentence types, chatGPT relatively gives the right response. Therefore, overall chatGPT is quite capable of understanding input in the form of declarative, interrogative and imperative sentences and providing feedback according to user expectations.

### Diction Variations

Variations in diction are closely related to historical experience, thus influencing the choice of words in the writing produced. Someone with a political background or who enjoys reading political texts will indirectly influence the choice of words in the resulting writing. For writers, variations in diction are very important to create cer-

tain perceptions for readers. The choice of words can be seen from the aspects of formality, synonyms, euphemisms, connotations and cultural connections.

In the context of chatGPT, we want to see how diction varies in feedback to users. Following are some findings from the case study process:

- Academic, Formal, and Informative

In general, the feedback provided by chatGPT uses academic, formal and informative word choices. This is based on its main service, namely providing informative and reliable feedback. So, the closest types of diction are academic, formal and informative.

- Minimal Variation of Synonyms

Until this article was written, linguistic developments in chatGPT, especially in producing feedback in Indonesian, were relatively good. However, if you look closely, chatGPT still seems monotonous in combining several words that have the same meaning (synonyms) in a term. Instead of using word variations, chatGPT chooses to repeat the same words throughout the generated text. This is because it is influenced by two possibilities, first to avoid meaning bias or limited capabilities that chatGPT



currently has.

- Adaptive to User-requested Text Genres

As a service embedded in AI technology, chatGPT has the ability to adapt to user desires. If we ask for feedback with a certain text genre such as description, narrative, exposition, or other genre, then chatGPT will automatically generate feedback whose diction is adjusted to that text genre.

Overall, chatGPT is able to produce natural writing but still has minimal variations in diction. To overcome this, users must provide clear instructions, for example by adding the words “(use word variations)” or “(make it in the description text)” and other relevant instructions. The more detailed the instructions given, the closer the feedback given to the user’s wishes.

## Gramatical

One important aspect of Indonesian is sentence structure. Indonesian is a language that has standard sentence patterns. An arrangement of words can be said to have meaning and context if it at least fulfills the elements of subject and predicate. If these elements are not fulfilled in a sentence, it is likely that the reader will be confused about understanding the message you want to convey.

As a language model, chatGPT also studies and adopts sentence structures in a language, one of which is Indonesian. Following are some findings on the application of Indonesian grammatical elements in chatGPT feedback.

Main Elements of a Sentence (subject + predicate)

The first sentence has the pattern of subject + predicate + object. However,

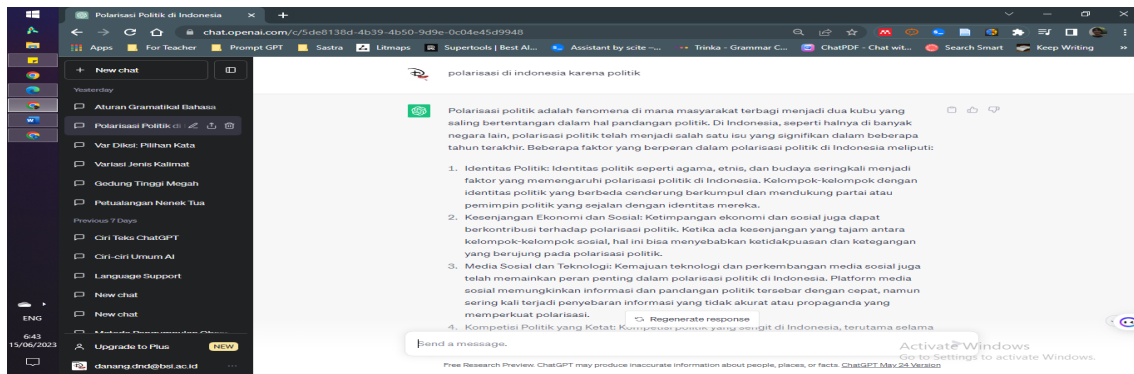


Figure 5. Response from ChatGPT

in the next sentence, ChatGPT is able to vary the sentence pattern by placing a place description at the beginning of the sentence. This aims to ensure that readers do not experience boredom when reading long informational texts. So it can be concluded that chatGPT is quite capable of producing text with a variety of sentence structure.

This creates writing that is fresh, natural, not monotonous, and closer to human results.

In the second sentence, which reads “This could hinder constructive dialogue, reduce the ability to reach consensus, and muddy the overall political climate.” chat-

## Use of Pronouns and Punctuation

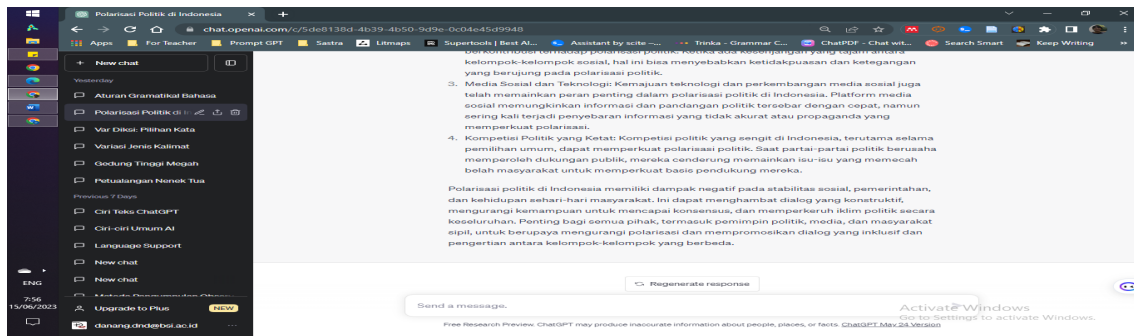


Figure 6. Response from ChatGPT

GPT uses the pronoun “ini” which refers to the subject “Political Polarization” which is not commonly used in Indonesian. The use of the pronoun “this” as a subject is usually followed by other words such as “this”, “this condition”, “this phenomenon”, and so on. In this condition, chatGPT is still affected by English sentence structure. Then, in the aspect of using punctuation marks, ChatGPT is able to place them correctly. This means that chatGPT has a very good understanding of the placement and use of punctuation marks so that the ideas in sentences can be understood by readers well.

### CONCLUSION

Computing is essentially a process of imitating human thinking, especially with regard to logic. Starting from simple calculations until now artificial intelligence has emerged which is increasingly approaching complex human thinking patterns. ChatGPT with its developed language model can be said to be an important milestone in the development of AI. It is designed to produce accurate and communicative responses. Based on the search results from several trials using linguistic variations, there are the following findings. First, the feedback provided is very dependent on the user’s input text. The more specific the prompt is, the more accurate the feedback provided will be. In

general, chatGPT produces 400-500 words, but users can regulate how detailed and long the feedback is by setting restrictions such as “discussion of language functions in 2000 words”, then chatGPT will produce feedback according to the input text. Furthermore, chatGPT is quite good at responding to declarative, interrogative and imperative sentence types. Next, at the level of diction variations in general, they are academic, formal and informative; minimal variety of synonyms; and has the ability to adjust diction to the genre requested by the user. Finally, in the grammatical aspect, chatGPT is able to produce text that meets Indonesian language rules properly and correctly. However, there are still some inaccuracies in using diction and pronouns.

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