Artificial Intelligence as a Linguistic Source: Focus on Affecting Factors

الذكاء الاصطناعي كمصدر لغوي: التركيز على العوامل المؤثرة

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Abstract:

Artificial intelligence (AI) nowadays represents one of the important sources for getting knowledge. One of the aspects of knowledge is related to linguistics which is the systematic study of language. AI can be employed as an essential device for getting information about linguistics and its branches. However, AI may have some weaknesses that affect its performance while supporting users with knowledge. This study aims to investigate the factors that may affect the process of searching the information and the accuracy of the information supported by AI. The study is qualitative in which the data are collected from AI. The researcher collected the data from AI by making conversations with chat GPT. Then the researcher took screenshots of the conversations with chat GPT 3.5 and 4.0 versions. The study found that the background of different users affects AI answering the questions. Moreover, the study found that the way of formulating the sentence and the content of the question raised by users affect the given information by AI. The study concludes that AI does not always support accurate answers but, it may be affected by different factors. Thus, it is important to take into consideration these affecting factors by researchers while using AI as a linguistic source.

Keywords: Artificial Intelligence, Linguistics, Structure and Content, Affecting Factors.

الملخّص:

يمثل الذكاء الاصطناعي في الوقت الحاضر أحد المصادر المهمة للحصول على المعرفة. يرتبط أحد جوانب المعرفة باللغويات وهو الدراسة المنهجية للغة. يمكن استخدام الذكاء الاصطناعي كأداة أساسية للحصول على معلومات حول اللغويات وفروعها. ومع ذلك، قد يكون للذكاء الاصطناعي بعض نقاط الضعف التي تؤثر على أدائه أثناء دعم المستخدمين بالمعرفة. تهدف هذه الدراسة إلى التحقيق في العوامل التي قد تؤثر على عملية البحث عن المعلومات ودقة المعلومات التي يدعمها الذكاء الاصطناعي. الدراسة نوعية حيث يتم جمع البيانات من الذكاء الاصطناعي. جمع الباحث البيانات من الذكاء الاصطناعي من خلال إجراء محادثات مع دردشة GPT. ثم التقط الباحث لقطات شاشة للمحادثات مع إصدارات دردشة

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GPT 3.5 و ٤.٠. وجدت الدراسة أن خلفية المستخدمين المختلفين تؤثر على إجابة الذكاء الاصطناعي على الأسئلة. علاوة على ذلك، وجدت الدراسة أن طريقة صياغة الجملة ومحتوى السؤال الذي يطرحه المستخدمون تؤثر على المعلومات المقدمة بواسطة الذكاء الاصطناعي. وخلصت الدراسة إلى أن الذكاء الاصطناعي لا يدعم دائمًا الإجابات الدقيقة، بل قد يتأثر بعوامل مختلفة. وبالتالي، من المهم أن يأخذ الباحثون هذه العوامل المؤثرة في الاعتبار عند استخدام الذكاء الاصطناعي كمصدر لغوي.

الكلمات المفتاحية: الذكاء الاصطناعي، اللغويات، البنية والمحتوى، العوامل المؤثرة.

Introduction:

The technological development offers a fast access to the information. Researchers employ different ways to get information and knowledge. One of the essential and important advancements in the field of technology is   Artificial intelligence (AI). AI applications have made a remarkable leap in academic research. AI serves as an important source of information in different fields. It enables scholars and researchers to get and process information. Linguistic scholar can use and employ AI in their academic studies of different fields of linguistics starting from phonology, grammar, semantics, pragmatics, applied linguistics, and so on. AI, like other tools, is not perfect, and it has some factors that may affect the academic studies. These factors include different aspects linguistic and nonlinguistic. Therefore, the researchers should be aware of these factors that may have an impact on the quality of their studies.

Statement of the Problem:

AI represents one of the new sources for the investigation of knowledge of different areas. Many researchers rely on AI to get information. AI as a tool may include some gaps or weaknesses that may affect the process of searching and getting knowledge. This study tries to fill this gap which is not tackled extensively in the literature.

Aims of the Study:

This study aims to reveal the factors that may affect the process of searching and getting information in AI. It is an attempt to reveal that some factors affect AI

answering when it is used by researchers in their academic work. It aims to classify these factors which are linguistic and nonlinguistic ones.

Research Questions:

The study raises the following research questions:

1. Is AI as a device for getting information affected by certain factors?

2. Do different backgrounds of users affect AI answering or supporting information?

3. Is AI answering affected by the structure and content of the sentence?

AI Definitions:

Artificial intelligence (AI) was originally envisioned as a computer capable of mimicking human intellect in terms of both cognition and decision-making (Frantz, 2003). Artificial intelligence (AI) is a technical innovation with far-reaching implications for the economy, society, and politics. AI enables computer systems to learn from previous experiences, adapt to new inputs, and automate jobs that people traditionally undertake, such as analysing visual data and making judgements. AI is projected to revolutionise many aspects of human existence, just like steam engines and electricity did in the past (Quan and Sanderson, 2018). According to Alsheibani et al. (2018), AI is a collection of tools and technology capable of augmenting and enhancing organisational performance.

AI language learning tools are computer programs or software that employ artificial intelligence (AI) algorithms to assist users in learning and improving their foreign language abilities. These tools may include software that automatically translates text or voice in real time, language tutoring systems that provide personalised lessons and feedback, and language creation systems that generate original material in a certain language (De la Vall & Araya, 2023).

The Structure of the Sentence:

Sentences in languages take different structures to express different meanings. Sentence structures of English take four basic classes as follows: declarative, interrogative, exclamative, and directives or command (Downing & Locke, 2006, p.177). The following examples represent these classes:

1. **Declarative**: John sings.

2. **Interrogative**: it has two types, yes/no and wh-questions:

- yes/no: does John sing?

- Wh-questions: what does John sing?

3. **Exclamative**: how well John sing!

4. **Directives or Command**: sing!

In addition to these types, sentences can take other forms such direct, indirect structure and negative form. Each form has an impact on the meaning or understanding of the sentence. The indirect form as in "keep still! she said to the child", while the direct form as in "she told the child to keep still". Moreover, the negative form includes adding not to the sentence as in "the girl isn't a student" (Quirk and Greenbaum, 1976, p. 26, 344) .

The Content of the Sentence:

Other important aspects that affect the meaning and understanding of the sentence. The use of specific terms may indicate or convey different meanings. Fleber (1983) defines terms as one or more words having defined meanings. Furthermore, Pearson (1998) defines the term as a word or phrase employed in a defined or exact sense in a certain subject or field; a technical expression; any word or set of words expressing a concept or idea, or used in a specific context. Thus, the terms play a role in conveying meanings, and using each term instead of another will have an impact on the meaning of the sentence.

Moreover, the details included in the sentence such as giving more information about the context also has an impact on the understanding of the sentence. A context, for Lewis (1980), is an ordered triple: the "location—time, place, possible world—where a sentence is said." Moreover, Gross (2013) states that the context, given the meaning of the phrase, decides or fix the proposition conveyed. What was said should be based on context and sentence meaning. If this were not the case, a single statement with the same meaning may be spoken in the same context while expressing a completely distinct notion. Thus, the context is strongly related to the meaning and what the sentence conveys.

Users of AI:

People around the world come from varied cultural backgrounds and speak different languages and they are classified and distinguished according to many factors such as scientific and cultural backgrounds. Each person has his own interests and preferences in life. According to these interests, people try to engage themselves with things they prefer or like (Rallis & Casey, 2005).

People's different backgrounds affect the process of communication in life, the way you speak to an ignorant person is different from speaking to an educated person (Lustig & Koester, 2010). Thus, the communication either with human or AI applications will be affected according to their cultural background.

Methods of the Study:

The study is qualitative, in which the data is collected from AI. The researcher collected the data from chat GPT 3.5 and 4.0 versions, through his experience and observation of AI answering by making conversations with chat GPT. Then the researcher took screenshots of the conversations with chat GPT 3.5 and 4.0 versions to employ them in the data analysis.

Data Analysis and Findings:

The study included the following data to reveal the factors that affect AI answering:

1. Background of the User: it is related to the personal data stored through past conversations and interactions between AI and users .AI answering differs among different users according to the background and personal preference of each user. AI provides information that aligns with the preferences and interests of each user. Moreover, the users who have been using AI for a long time will get different answers from users who have recently started to use AI. Thus, AI supports different answers to the same questions raised by different users. As in the following figure:

Figure 1: *AI response to user (A)*
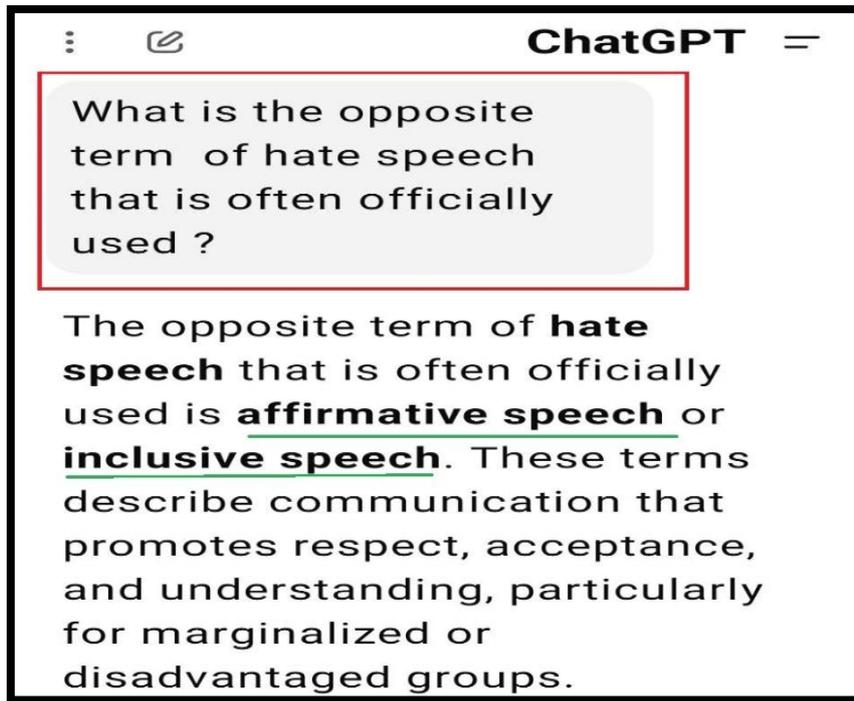
Note: **User (A) has recently started to use AI.**

Figure 2: *AI response to user (B)*
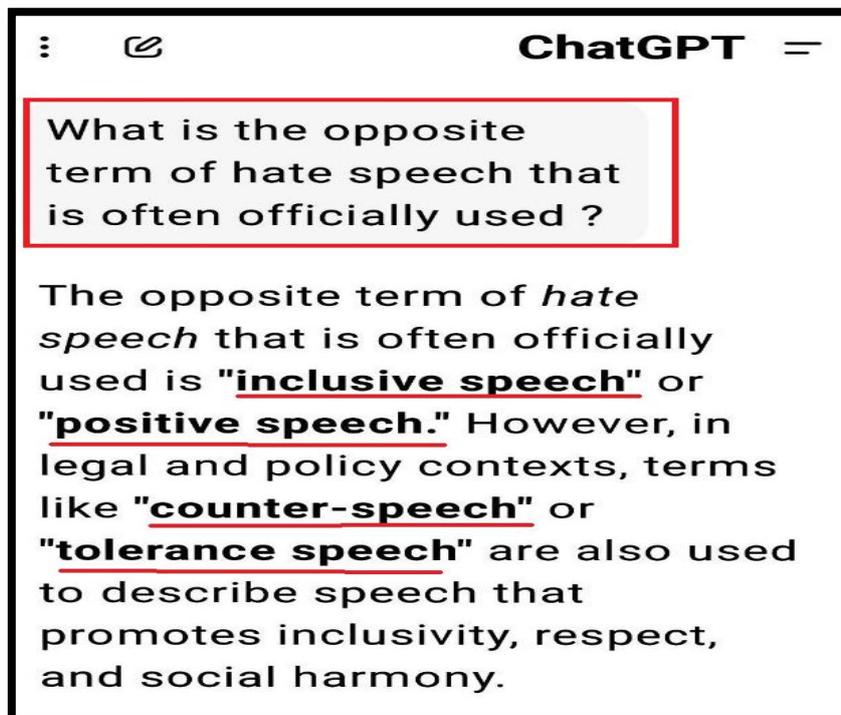
Note: **User (B) has been using AI for a long time.**

In these two responses, AI supports two different answers to two different users. The user, who has been using AI for two years, got more detailed responses or more choices than the other user. This finding indicates that AI supporting information is not fixed but it is affected by the background of the user.

2. The Form of the Question: it is concerned with the way of formulating or constructing the structure of the question. Different structures of the same question affect the AI answering. For instance, the way you phrase the question has an impact on the IA's response. For instance, the way you start something with a question is different from how you start it with a positive or assertion. Additionally, direct and indirect structures of the question may affect AI performance to support answers. Moreover, open-ended or close-ended questions may also affect AI answering the questions. The following figures show the case

Figure 3: *AI response to the affirmative sentence or statement*
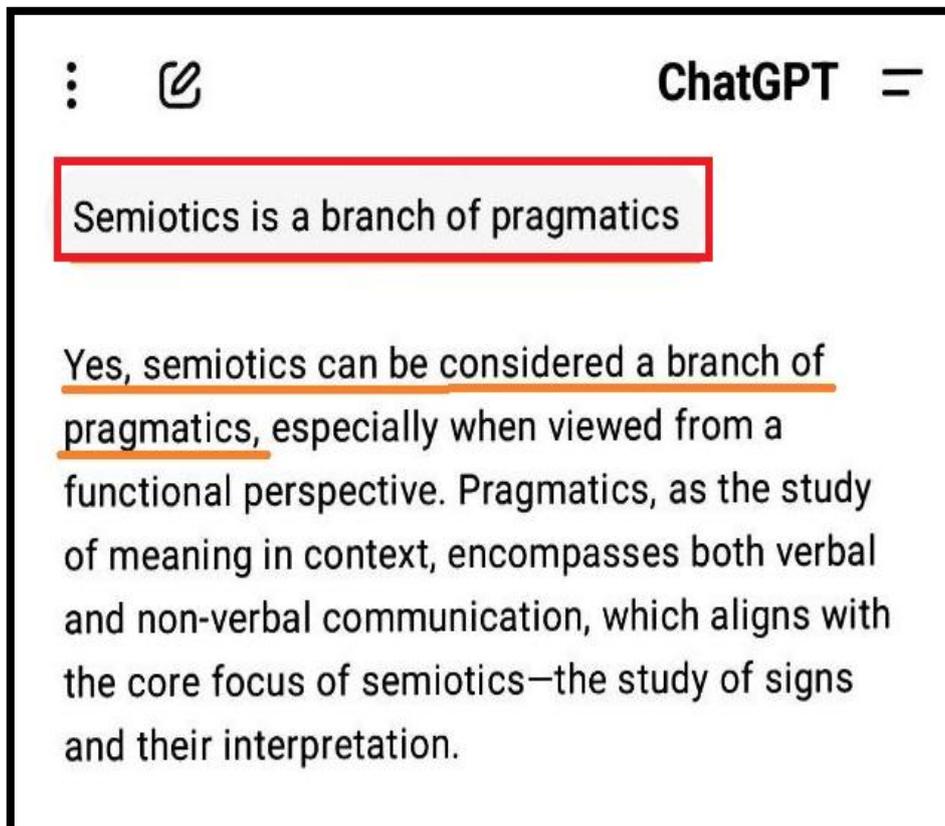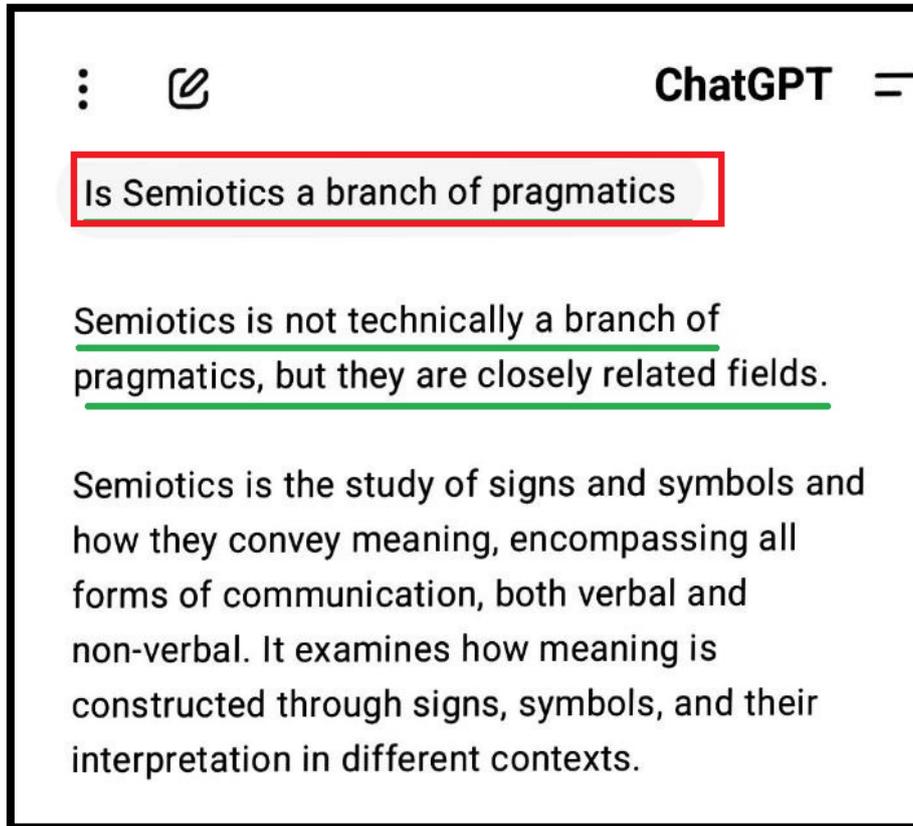
Figure 4: *AI response to a sentence in the form question*

In these two responses, AI gives two different answers with two different or debatable views. The structure of the sentences given to AI affects the content of the information supported by AI. Thus, researchers should take structuring the sentence into consideration when they use AI as a source.

3. The Content of the Question: The details you provide or include in the questions you pose. impact the performance of AI. For instance, AI response will be changed if you provide it with more details about the question you are asking. The following figures illustrate the case.

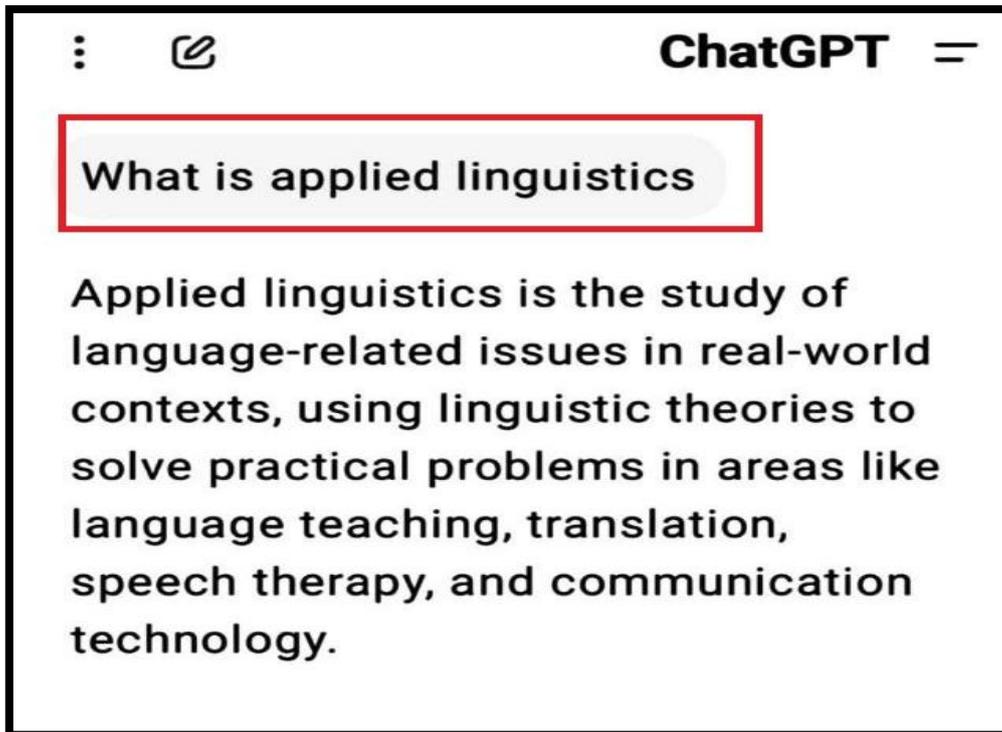**Figure 5:** *AI response to the question with a little content*

Figure 6: *AI response to the question with the term (define)*
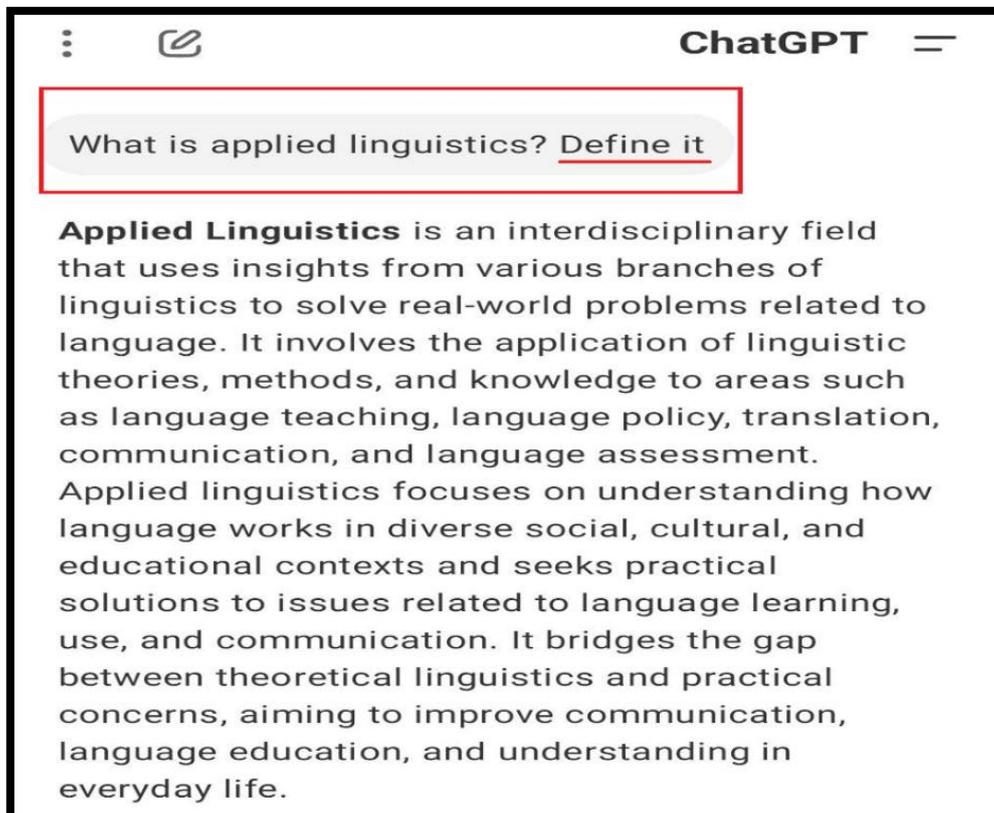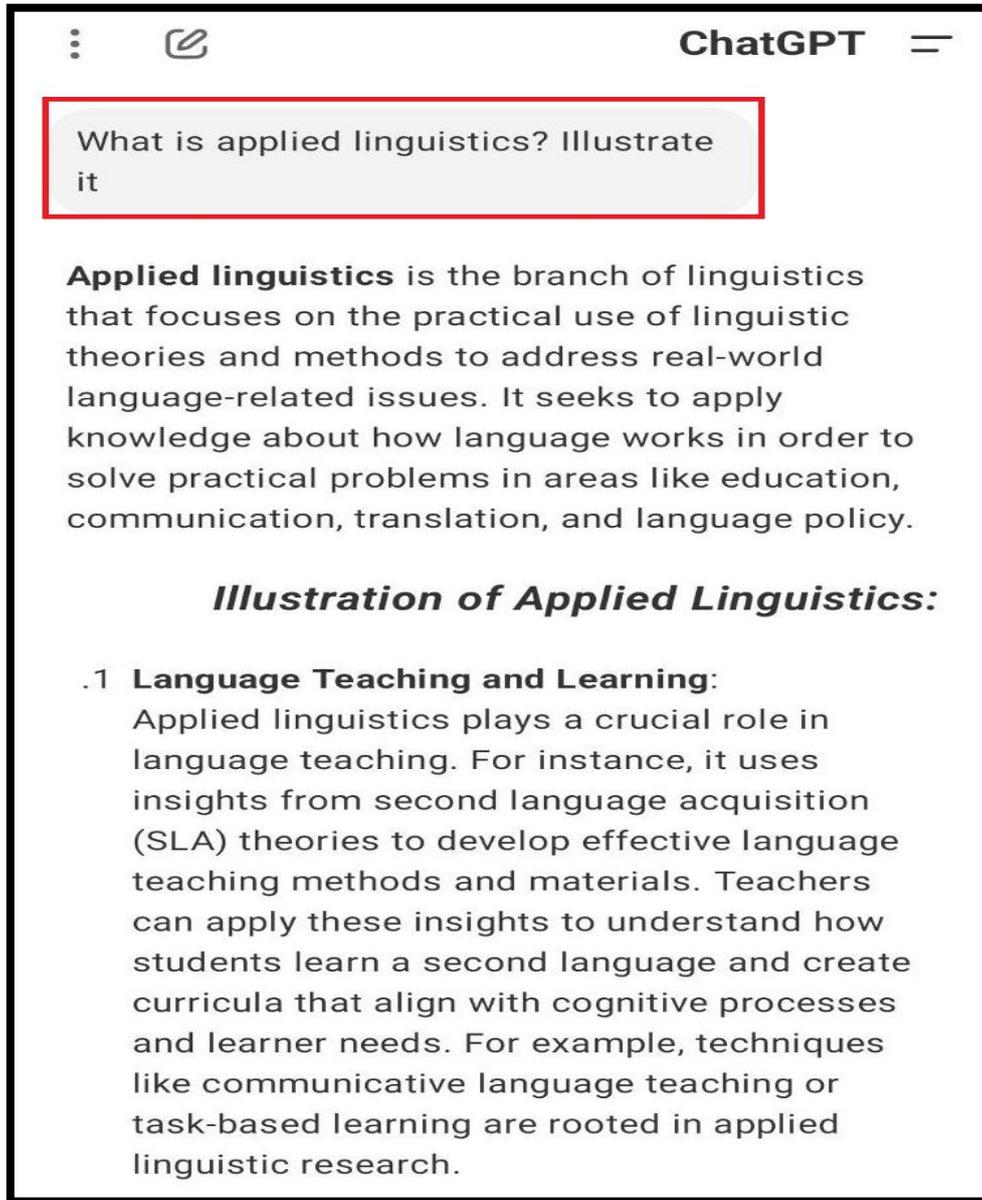
Figure 7: *AI response to the question with the term (illustrate)*

In these three similar questions, AI supports three answers which are different in their amount of information. Each question got a specific answer with different amount of information. Thus, it is essential for researchers to use precise terms in the questions to get the required answers.

Discussion of the Findings:

The study found that the performance of AI can be affected by many factors. These factors should be taken into consideration by researchers in their academic work or study. For instance, the researcher must formulate the question directed to the AI in an appropriate or correct way to get the required answer. Furthermore, AI users should select precise terms and provide AI with more details when raising their questions on AI applications. Finally, researchers should be aware that their personal information or data stored in AI memory through past conversations with AI, thus, it is recommended to repeat the same question or use more than one type of AI application to avoid getting biased answers.

Conclusions:

The study concludes that AI does not always give accurate or fixed answers but, it may be affected by different factors such as the background of the user who uses the AI, the way of formulating the structure of the question, and the content and the amount of information in the question.

References:

Agrawal, A, K., Joshua S. G and Goldfarb, A. (2019). Economic policy for artificial intelligence. *Innovation Policy and the Economy 19: 139–59.*

Alsheibani, S. Cheung, Y. and Messom, C. (2018). Artificial Intelligence Adoption: AI-readiness at Firm-Level. *In Proceedings of PACIS2018: Pacific Asia Conference in Information Systems (PACIS). Chicago: Association for Information Systems, p. 37.*

De la Vall, R. R. F., & Araya, F. G. (2023). Exploring the benefits and challenges of AI-language learning tools. *International Journal of Social Sciences and Humanities Invention, 10(01), 7569-7576.*

Downing, A and Locke, P. (2006). *English Grammar: A University Course*. London: Routledge.

Fleber, H. (1983). *Terminology Manual*. UNESCO

Frantz, R. (2003). Artificial intelligence as a framework for understanding intuition. *Journal of Economic Psychology, 24(2), pp. 265-277.*

Gross, S. (2013). What is a Context?. *Perspectives on pragmatics and philosophy, 113-132.*

Lewis, David (1980). Index, Context, and Content. *In Philosophy and Grammar, eds. S. Kanger and S. Öhman, pp. 79-100. Dordrecht: D. Reidel*

Lustig, M. W., & Koester, J. (2010). *Intercultural Competence: Interpersonal Communication across Cultures (6th ed.)*. Boston: Pearson.

Pearson, J. (1998). *Terms in context*. John Benjamins publishing company

Quan, X. I., and Sanderson, J. (2018). Understanding the artificial intelligence business ecosystem. *IEEE Engineering Management Review, 46(4), pp. 22-25.*

Quirk, R and Greenbaum, S. (1976). *A University Grammar of English*. Longman.

Rallis, S., & Casey, C. (2005). *Language and cultural diversity in U.S. schools*. London: Praeger