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TWEET MAPPING ANALYSIS OF THE USE OF CHATGPT AS A LEARNING RESOURCE

Ilham Aditia Rahman, Ulfia Rahmi, Nofri Hendri, Abna Hidayati*
Teknologi Pendidikan, Fakultas Ilmu Pendidikan, Universitas Negeri Padang, Padang, Indonesia
ilhamaditia69@gmail.com

ABSTRACT

ChatGPT which serves 180 million global users, facilitates learning but poses risks such as reduced creativity and challenges in distinguishing fact from opinion. In Indonesia, this has become the main topic of discussion on Twitter which changes the dynamics of communication and changes the paradigm of information access and also makes ChatGPT a learning resource and reference. Utilizing word cloud and cluster analysis, this research explores the dominant themes in tweets related to ChatGPT as a learning and reference resource. The objectives include identifying keyword frequencies through the word cloud method, analyzing clusters of tweets based on usernames through cluster analysis, and understanding the global distribution of ChatGPT-related tweets by mapping clusters based on usernames. Findings gathered through Word Cloud analysis revealed ChatGPT as the most frequently mentioned term, with 583 words appearing. Topic clusters include opinions, information, and personal experiences, with opinions emerging as the most discussed theme. Then, this discussion spread outside Indonesia. The Asian continent is a cluster in distribution with a lot of data found regarding the use of ChatGPT as a learning resource.

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1. INTRODUCTION

ChatGPT, OpenAI's chat-based AI technology, was created as a virtual assistant to assist humans with tasks, present creative solutions, and combine natural language with automated processing. ChatGPT not only facilitates information searches, but also supports various scientific disciplines as learning and reference sources. Handian & Rahmi (2023) emphasize the role of ChatGPT as a technological solution that allows human interaction with systems without requiring understanding of programming languages. As a versatile virtual assistant, ChatGPT covers a wide range of work areas, assisting in insight exploration and providing creative solutions. Its potential applications include learning resource functions in various scientific disciplines, demonstrating its broad and deep impact in facing complex challenges.

A significant increase occurred in internet usage in Indonesia from 2013 to 2023, reaching a total of 276.4 million users in January 2023. This represents a jump of 5.44% compared to the previous year, which reached 202.6 million users in January 2022 (Aminah & Marda, 2022).

In addition, a report from the Exploding Topics site, released by Duarte in 2023, stated that the number of unique ChatGPT users worldwide had reached an astonishing 180 million. This was equivalent to 2.25% of the global human population, which at that time reached 8 billion individuals. Since February 2023 until now, ChatGPT visitors have continued to increase, reaching a monthly visit of 1 billion. The highest peak was recorded in April and May 2023, with the number of visitors reaching 1.8 billion in a month (Duarte, 2023). This phenomenon reflects the significant appeal and broad impact of ChatGPT in meeting user needs in this digital era.

A survey at Stanford University showed that 17% of students use ChatGPT in assignments and exams, with the majority (60%) for brainstorming and ideas, and 30% for answering multiple choice questions. In the context of Educational Technology, ChatGPT is a large language model related to theory, computer technology, learning design, implementation and management of educational systems (Dwi, 2024). Even though it has the potential to support learning, the use of ChatGPT can have a negative impact on educational technology students, such as reduced criticality, difficulty distinguishing facts and opinions, and difficulty developing creativity (Sumantri, 2023).

On the other hand, the rapid growth of social network X, such as Twitter, has become a popular platform in Indonesia with 27.1 million users. This phenomenon reflects success in creating a dynamic and instant communication space, where the topic of ChatGPT is often discussed (Yunita, 2019).

The word cloud method is used to identify dominant topics in tweets regarding ChatGPT as a learning resource. Visualization of the most frequently occurring words helps researchers understand key words in research data (Radhitya et al., 2020). However, in an educational context, the use of ChatGPT raises concerns about accuracy, potential errors, and inappropriateness of responses to learning needs. The risk of over-dependence, reduced critical thinking skills, as well as issues of privacy and security of student data need serious attention (Suharmawan, 2023). To analyze topics in tweets, clustering is carried out based on themes and Twitter user usernames using Cluster Analysis. The aim is to understand the dominant types of tweets, such as information, opinions or user experiences regarding ChatGPT as a reference and learning source, as well as tracking dominant topics on a country or regional scale (Ahmad Zaki, 2022).

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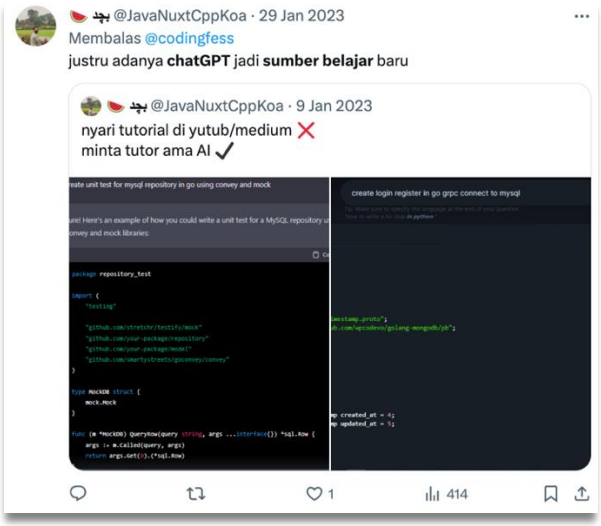
2. METHODS

This research uses a netnographic approach, a qualitative method that integrates internet and ethnographic elements (Priyowidodo, 2022). Netnography is applied to the Twitter community discussing the use of ChatGPT as a learning and reference resource. Cluster analysis was carried out on usernames that actively made tweets related to ChatGPT. The aim of this research is to explore individual self-interpretations in digital society regarding ChatGPT. This approach allows a deeper understanding of individuals' identities and interactions in online contexts. The research setting focuses on the ChatGPT Twitter community which involves users from various countries. The research objective involves analyzing keywords, clusters, and the distribution of tweets regarding ChatGPT as a learning and reference resource. Research instruments include the role of researcher, analysis, data processing software (Nvivo 12 Plus), digital notes, documentation, and literature documents. Data sources involve research subjects and informants, especially Twitter users who discuss ChatGPT. Data collection techniques use content analysis, observing tweets and responding to them. Analysis techniques include keyword, cluster and distribution analysis using Nvivo 12 Plus. Data interpretation is carried out to explain the meaning of the findings. The validity of the data is tested through triangulation, member checking, maximizing the persistence of observations, and data visualization. All of these techniques aim to ensure the quality and correctness of research data.

In this research, the samples taken were active Twitter users who discussed ChatGPT as a learning and reference resource. This sampling was only carried out on the Twitter social media platform with a population of Twitter users in various corners of the world.



3. RESULTS AND DISCUSSION

This research focuses on analyzing Twitter users' perceptions of ChatGPT as a learning resource, using Nvivo 12 Plus as the main tool. The goal is to understand users' conceptualization and assessment of the role of ChatGPT in learning and reference contexts. The mapping process involves word analysis using the word frequency method, implemented through word cloud visualization to identify dominant words in searches related to ChatGPT on Twitter.

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This research also involves a global dimension by applying advanced mapping techniques, especially through cluster analysis. Cluster analysis will be applied to two main aspects, namely topic formation based on user usernames and clusters that explain the distribution of tweets throughout the world. This approach allows understanding of ChatGPT usage patterns as a learning resource, taking into account interindividual and geographic variations.

In qualitative research, data visualization techniques, especially using word clouds in Nvivo 12 Plus, are a crucial aspect for understanding the dominant phenomena in the dataset (Ulfa, 2020). Word clouds help identify consistently appearing words, summarize information effectively, and visualize focused word patterns. In addition to mapping word frequencies, word clouds also improve the readability and visual appeal of text data, providing a clear picture through the proportion of word size as an indicator of frequency in research datasets. The following shows the results of text data visualization using word cloud regarding the use of ChatGPT as a learning and reference resource on Twitter.

The results of word visualization analysis using NVivo 12 Plus show the main focus on the word "ChatGPT" in the discussion. This word appeared 583 times, reflecting the dominance of discussions about ChatGPT as a learning resource and reference in the research dataset. This significant number of words not only reflects quantitative aspects, but also shows the intensive level of engagement with the ChatGPT concept in conversations on Twitter. The results of this visualization provide a solid basis for further investigating the use of ChatGPT by analyzing emergent word patterns in depth.

@boedyirh Dengan adanya sumber belajar seperti google, youtube, chatgpt harusnya biaya pendidikan bukannya lebih murah ya.
@heyshrutimishra Strategy 2 – Berikan teks referensi: • Perintahkan ChatGPT untuk merespons menggunakan teks referensi, seperti tautan ke PDF atau situs web • Perintahkan ChatGPT untuk merespons dengan kutipan dari teks referensi
@ajjarsip chatgpt ga terlalu worth it si di prodiku, soalnya QnA pas presentasi harus ada sumber referensi yang jelas. Kalo gaada sumber dianggap omong kosong dan argumen tidak bisa diterima. Tapi karena masing-masing punya kekuatan referensi malah jadi makin seru buat didebat.

From the table presented, several main findings regarding the role of Twitter in the use of ChatGPT as a learning and reference resource can be identified. First, Twitter users actively expressed their opinions about using ChatGPT. Second, Twitter is used as

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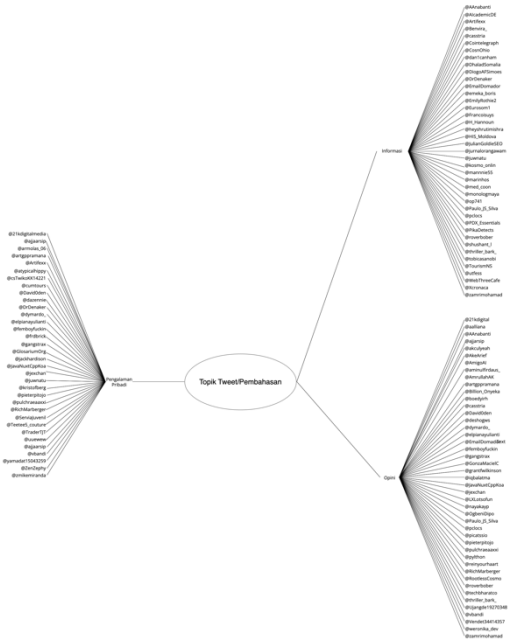
a means to share information regarding the use of ChatGPT. Furthermore, users are not only informative, but also use the platform to tell stories or share personal experiences around using ChatGPT, providing a deeper dimension to user engagement and influencing perceptions in the Twitter community.

Furthermore, within the framework of this research, discussion topics will be broken down into three main domains, namely opinions, information and personal experiences expressed by Twitter users in the context of ChatGPT as a learning and reference source. A cluster analysis approach will be used to group Twitter users who produce tweets related to ChatGPT as a learning and reference source, taking into account the three topic domains. The following are the clusters that have been summarized from the data obtained in this research based on 3 discussion topics:



From the visual cluster analysis above, it can be clearly concluded that Twitter users discuss ChatGPT as a source of learning and reference the most, with the number of topics reaching 45, based on discussion of opinions obtained from data. Meanwhile, the level of discussion based on Twitter users' personal experiences regarding the use of ChatGPT as a learning resource was the lowest among the three topic clusters, reaching only 33 data. In addition, there are 41 Twitter user accounts that produce tweets based on information. The following is a table showing topic clusters to make it easier to present the data in this research:

Opinion	Information	Personal Experiences
45	41	33

Furthermore, in this research, an analysis of the geographic distribution of Twitter users will be carried out discussing ChatGPT as a learning resource based on continent.

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However, specifically for users from Indonesia, there will be a separate classification without being included in the Asian continent category. This is because most of the data obtained comes from users in Indonesia. However, countries such as Malaysia, Japan and several other Asian countries will still be included in the Asian Continent classification.

In this research, to classify areas of Twitter users who discuss ChatGPT as a learning and reference resource, a cluster analysis method will be used which is similar to the same approach that has been used to identify topic clusters in the previous discussion.

A cluster analysis approach will be used to find out how the user area is distributed based on continent. The following are the clusters that have been summarized from the data obtained in this research based on continents in the world:

It can be seen in the image above that the most data in this research is from Twitter users from Indonesia who talk about ChatGPT as a learning and reference source. Furthermore, in the context of continental geographical boundaries, Twitter users from the Asian continent dominate the data in this discussion. However, Twitter users who talk about ChatGPT as a learning and reference resource from the Australian continent are the rarest data found in this research. This is due to limited data and language barriers, making it difficult to find much data on Twitter users who discuss ChatGPT as a learning resource on the Twitter social media platform.

To make it easier to present the data, the following is a table regarding the regional distribution clusters of Twitter users which discusses ChatGPT as a learning and reference resource:

Indonesia	25
Benua Afrika	11
Benua Amerika Selatan	10
Benua Amerika Utara	12
Benua Asia	13
Benua Australia	10
Benua Eropa	12

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4. CONCLUSION

The conclusion contains the essence of the research findings which are based on the research objectives that have been stated in the background section.

5. AUTHORS' NOTE

All authors contributed to the conception and design of the research. Ilham Aditia Rahman conducted the material compilation, data collection, and analysis under the guidance of Ulfia Rahmi, Nofri Hendri, and Abna Hidayati. The initial draft of the manuscript was written by Ilham Aditia Rahman, and all authors provided feedback on earlier versions of the manuscript. The authors collectively discussed the findings and contributed to the final manuscript, including data analysis, data presentation, result composition, and final editing.

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