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Google Gemini as a Learning Assistant: Exploring Student Perceptions

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ABSTRACT

The emergence of Generative Artificial Intelligence (GAI) has had a significant impact on learning. One of the AI technologies that is currently developing is Google Google Gemini, which has excellent potential for use as a learning assistant in physical classrooms. This research aims to understand students' perceptions of using Google Google Gemini as a tool in the learning process, with a focus on four main aspects: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BIU). The research method used was a survey involving 45 students of the Educational Technology Study Program, Faculty of Education, Indonesian Universitas Pendidikan Indonesia (UPI). The research results show that students have a very positive perception of Google Google Gemini. In the PU aspect, students feel that Google Google Gemini helps them understand course material, improves learning efficiency, and provides relevant and helpful information during class learning. In the PEOU aspect, students stated that learning to use Google Google Gemini was very easy, interaction with this tool did not require much effort, and the tool had a user-friendly interface. In terms of ATU, students have a very positive attitude towards the use of Google Google Gemini, considering it a good idea and feeling that this tool makes the learning process more enjoyable. Finally, in the BIU aspect, students showed a firm intention to continue using Google Google Gemini in their future academic activities, as well as a desire to recommend this tool to their friends.

Keywords*: *learning assistant, generative ai, google google gemini

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INTRODUCTION

Technological developments have brought significant changes in various life aspects, including education and learning. Artificial intelligence is one of the latest technological innovations gaining increasing attention. Artificial intelligence, incredibly generative AI, has great potential to support the learning process. Generative AI, such as Google Gemini, can generate text content automatically based on the input provided, thus facilitating learners' understanding and mastery of the material (Ilieva et al., 2023; Fajar et al., 2023; Shah, 2023). This technology enables faster and more accurate information and personalization in the learning process, which is very relevant in the modern educational context (Alqahtani et al., 2023; Bhutoria, 2022).

Google Gemini is a generative AI technology designed to help users generate text based on the input provided. Developed by Google, Google Gemini uses advanced language models to understand context and produce relevant and meaningful answers. In recent years, Google Gemini has experienced significant development, with increased capabilities in understanding and answering user questions more accurately and efficiently (Raman et al., 2024). In an educational context, Google Gemini can be a learning assistant that provides additional explanations, assists in composing essays, and facilitates class discussions (Ananda, 2024; Baytak, 2024), the use of Google Gemini in learning lies in its ability to improve student academic performance. Research by Imran & Almusharraf (2024) shows that Google Gemini has the potential to become a handy tool in the world of education with its broad capabilities for producing multimodal content. In this study, researchers explored the relevance of Google Gemini for future educational efforts and practical

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applications of the latest technology. In addition, this study also examines the significant challenges and ethical considerations that must be overcome to ensure responsible and effective integration into the world of education. Jinowat et al. (2024) found that Google Gemini can help students develop critical writing skills. Their research focused on the impact of collaborative writing using Google Docs and Google Gemini on essential skills of writing. The research results show that using Google Gemini and Google Docs in collaborative writing can be an effective tool in education, helping students develop their critical writing skills through a structured and collaborative process. Similar findings were also reported by Alshraah et al. (2024), which shows that using Google Gemini can improve student learning and engagement in linguistics education. This research focuses on how linguistics lecturers can utilize Generative AI (GenAI) to improve their teaching competence and student engagement. This research shows the excellent potential for using GenAI in linguistics education. Tools such as Quizizz, ChatGPT, Education Copilot, and Google Gemini can be used effectively by lecturers to enrich their teaching methods, make material more interactive and engaging, and facilitate greater student engagement.

Furthermore, research by Taylor et al. (2022) reveals the great potential for collaboration between humans and Generative Artificial Intelligence (GAI) in education. The study results show that by using appropriate analytical methods, such collaboration can improve the quality of learning design and provide new insights into how advanced technologies such as GAI can be integrated into teaching and learning. These studies highlight the significant benefits of using Generative Artificial Intelligence in Generative Artificial Intelligence learning. Generative artificial intelligence such as Google Gemini not only helps students understand subject matter better but also improves critical writing skills, increases engagement in class, increases study time efficiency, and even helps design learning designs. Therefore, it is essential to understand how students accept and use Generative Artificial Intelligence (GAI), such as Google Gemini, as a learning assistant in the context of their learning in a physical classroom.

Based on the previous description, this research explores students' perceptions of using GAI Google Gemini as a learning assistant in physical classrooms using the Technology Acceptance Model (TAM) theory. TAM is one of the most widely used models for understanding user acceptance of technology. This model evaluates two main factors: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU refers to the extent to which a person believes that using a particular technology will improve his or her performance (Saadé & Bahli, 2005), while PEOU refers to the extent to which a person believes that using a particular technology will be free of effort (Ifinedo, 2017). In the context of this research, PU and PEOU will be evaluated to determine how students' perceptions of the use of Google Gemini influence the acceptance and use of this technology as a learning assistant in physical classroom learning, especially in higher education settings. This research is important because it can provide valuable insight into optimizing the use of Google Gemini to support the learning process. Thus, it is hoped that this research can significantly contribute to academic literature and educational practice and provide insight into optimizing the use of Google Gemini as a learning assistant in physical classrooms.

METHOD

This research uses a survey method to collect data regarding student perceptions of using Google Gemini as a learning assistant in physical classrooms. The survey method was chosen because it allows data to be collected from many respondents in a relatively short time and provides a representative picture of student perceptions (Creswell, 2015). The survey was conducted after students attended an in-class learning session using the Google Gemini application. This research uses a population that is easy to reach, namely undergraduate students from the Educational Technology Study Program at the Indonesian University of Education. A total of 47 students participated in this research, and 45 people provided valid feedback. Samples were taken purposively from an accessible population, with the criteria of attending at least one learning session using the Google Gemini application.

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The survey was administered to students using several questions to validate answers and gain diverse perspectives. The questions were designed to measure various aspects of students' perceptions of using Google Gemini, including Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BIU). This research uses a 5-point Likert scale, where respondents are asked to provide responses between 1 (strongly disagree) and 5 (strongly agree).

Tabel 1. Survey Implemented in This Study

Aspect	ID	Item
Perceived Usefulness (PU)	PU1	Google Gemini helps me understand the course material better
	PU2	Using Google Gemini improves my learning efficiency
	PU3	Google Gemini provides relevant and useful information during classroom learning
	PU4	By using Google Gemini, I can have better discussions in class
Perceived Ease of Use (PEOU)	PEOU1	Learning to use Google Gemini was very easy for me
	PEOU2	Interaction with Google Gemini requires little effort
	PEOU3	Google Gemini is easy to use and does not require special training.
	PEOU4	Google Gemini has a user-friendly interface.
Attitude Toward Using (ATU)	ATU1	I have a positive view of the use of Google Gemini in the classroom learning process
	ATU2	Using Google Gemini makes studying in class a more enjoyable experience
	ATU3	I am motivated to discuss this in class with Google Gemini
	ATU4	Using Google Gemini in classroom learning is a good idea
Behavioral Intention to Use (BIU)	BIU1	I plan to continue using Google Gemini in my studies
	BIU2	I recommend Google Gemini to my friends
	BIU3	I am interested in exploring the features of Google Gemini further in learning
	BIU4	I am committed to using Google Gemini as a learning assistant

This study uses content validity and reliability to measure the quality of the instrument. Researchers conducted a trial on 30 randomly selected respondents to check the instrument's validity. Based on the calculation results, the Pearson product-moment (r) value ranges from 0.50 to 0.78, higher than the table r value of 0.361. Therefore, it can be concluded that the questionnaire items are valid for use (table 1). Next, the instrument's reliability was assessed using Cronbach's Alpha Coefficient. The analysis results show that the Cronbach's Alpha value of the questionnaire is 0.66. Thus, these reliability results are acceptable because Cronbach's Alpha value is more than 0.60.

Further findings from this research are presented descriptively, using SPSS version 25 software to calculate descriptive statistics. Data is collected through instruments distributed using Google Forms, making it easier for respondents to provide their responses quickly and efficiently. This research consists of two main phases. First, the data that has been collected is analyzed descriptively. This analysis provides a general overview of the distribution and characteristics of the data obtained, helping to understand the patterns and trends in students' perceptions of using Google Gemini as a learning assistant. Descriptive statistics such as minimum, maximum, mean, and standard deviation values are used to identify the range and variation in respondents' responses. Second, a theoretical and empirical review supported the descriptive analysis. With this two-phase approach, this research is expected to provide in-depth and evidence-based insight into students' perceptions of Google Gemini as a learning assistant and provide a solid basis for practical and policy recommendations for using generative AI technology in learning.

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RESULTS AND DISCUSSION

The summary results of the survey are presented in Table 2 to provide a brief overview of the responses collected. This table contains descriptive statistics of various categories of student perceptions towards the use of the Google Gemini application as a learning assistant in the physical classroom.

Tabel 2. Descriptive Statistics Result of Perception

Category	N	Min	Max	Mean	SD
Perceived Usefulness (PU)	45	10	19	15.33	2.09
Perceived Ease of Use (PEOU)	45	11	20	17.33	2.31
Attitude Toward Using (ATU)	45	10	19	15.83	2.49
Behavioral Intention to Use (BIU)	45	10	20	15.03	2.59

The results of the descriptive statistical analysis shown in Table 2 show students' perceptions of using Google Gemini as a learning assistant based on four main categories: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BIU). For the Perceived Usefulness (PU) category, with a total of 45 respondents (N), the minimum score is 10, and the maximum score is 19, with an average (mean) of 15.33 and a standard deviation (SD) of 2.09. These results indicate that most students feel that Google Gemini helps support their learning process, although there is moderate variation in their responses. In the Perceived Ease of Use (PEOU) category, with the same number of respondents, the minimum value is 11, and the maximum value is 20, with a mean of 17.33 and a standard deviation of 2.31. This shows that students generally found Google Gemini easy to use, with a relatively even distribution of responses but slightly more spread out than the PU category.

The Attitude Toward Using (ATU) category shows similar results, with a minimum value of 10, a maximum value of 19, a mean of 15.83, and a standard deviation of 2.49. These results indicate that students' attitudes towards using Google Gemini in learning are generally positive, but there is more significant variation compared to the PU and PEOU categories. Finally, for the Behavioral Intention to Use (BIU) category, the minimum score is 10, and the maximum score is 20, with a mean of 15.03 and a standard deviation of 2.59. This suggests that students' intention to continue using Google Gemini in the future is relatively high, although there is more significant variation in their responses. Furthermore, to provide a brief overview of the responses collected, a summary of the survey results is depicted in Figure 1, which contains the relative percentages for each topic based on the questions presented in Table 1.

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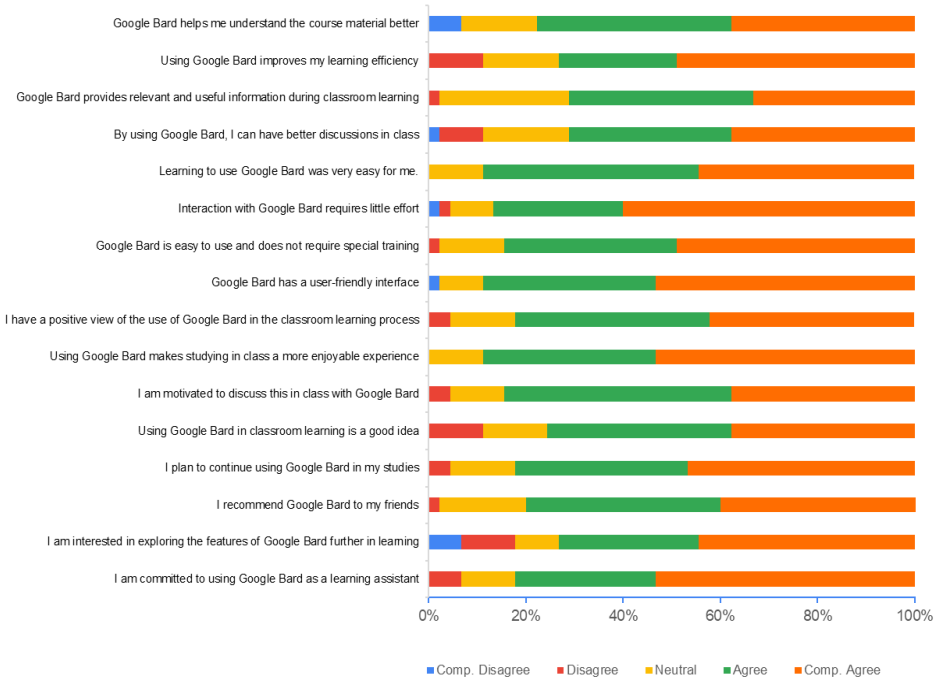

Figure 1. Summarized Overview of the Survey Results

Overall, these data indicate that students have positive perceptions of Google Gemini's usefulness and ease of use, attitudes that support its use in learning, and a strong intention to continue using it. The variation in responses suggests individual differences in perception, but overall, the results support the use of Google Gemini as an effective learning aid in higher education settings.

The survey results in the image above show students' perceptions of using Google Gemini as a learning assistant in the classroom, based on the Technology Acceptance Model (TAM) theory, which includes four main dimensions: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavioral Intention to Use (BIU). In the Perceived Usefulness dimension, most respondents felt that Google Gemini was helpful in their learning. As many as 53% of respondents strongly agreed that they were committed to using Google Gemini as a learning assistant, and 44% strongly agreed that they were interested in further exploring Google Gemini's features. Additionally, 40% of respondents strongly agreed to recommend Google Gemini to their friends. The percentage of students who agreed with these statements was also relatively high, indicating that the majority of students saw added value in using Google Gemini.

In the Perceived Ease of Use dimension, respondents also gave positive responses. 47% of respondents strongly agreed that they plan to continue using Google Gemini in their studies. As many as 38% strongly agree that using Google Gemini in classroom learning is a good idea, and 38% strongly agree that they are motivated to discuss material in class by using Google Gemini. Additionally, 53% of respondents strongly agreed that using Google Gemini makes studying in class a more enjoyable experience, indicating that the app's ease of use contributes to a more positive learning experience.

Respondents showed a positive attitude towards Google Gemini in the Attitude Toward Using dimension. As many as 42% of respondents strongly agreed that they had a favorable view of using Google Gemini in classroom learning. A total of 53% strongly agree that Google Gemini has a user-friendly interface, and 49% strongly agree that Google Gemini is easy to use and does not require special training. Additionally,

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60% of respondents strongly agreed that interacting with Google Gemini required little effort, and 44% strongly agreed that learning to use Google Gemini was very easy for them. This shows that students have a positive attitude towards using Google Gemini, mainly because of its convenience and user-friendly interface. In the Behavioral Intention to Use dimension, most respondents firmly intended to use Google Gemini in the future. As many as 38% of respondents strongly agreed that using Google Gemini would allow them to have better discussions in class. As many as 33% strongly agree that Google Gemini provides relevant and helpful information during classroom learning, and 49% strongly agree that Google Gemini improves their learning efficiency. Additionally, 38% of respondents strongly agreed that Google Gemini helped them understand course material better. The high percentages in the "Agree" and "Strongly Agree" categories indicate that students intend to continue using Google Gemini and appreciate its benefits in supporting their learning.

Perceived Usefulness (PU)

The Perceived Usefulness (PU) category in this study shows that most students positively perceive using Google Gemini as a learning assistant in class. Students feel that Google Gemini provides benefits in their learning process. This perception includes Google Gemini's ability to improve discussion skills in class, provide relevant and helpful information during learning, increase learning efficiency, and help them understand course material better. Perceived Usefulness is one of the main dimensions in the Technology Acceptance Model theory. This theory emphasizes that perceptions of the Usefulness of technology greatly influence users' attitudes and intentions to adopt the technology. In the context of this research, students feel that Google Gemini provides tangible benefits in their learning process.

First, students feel that Google Gemini helps them understand the subject matter better. These findings show that generative AI technology can simplify and explain concepts that may be difficult to understand. A study by Alam, A. (2023) found that using AI-based tools can improve students' understanding of learning material. This is relevant to the findings of this research, where students felt an increase in their understanding through the help of Google Gemini. Second, students stated that using Google Gemini increased their learning efficiency. Efficiency in learning is critical because it allows students to maximize their time understanding and mastering lesson material. Research by Chang et al. (2022) shows that using AI in education can increase the efficiency of students' study time, which means students can learn more quickly and effectively. This aligns with the perception of students in this research who felt that Google Gemini helped them study more efficiently. Third, students think Google Gemini provides relevant and helpful information during class learning. Relevant information is essential in the learning context because it helps students focus more and understand the context of the material being taught. Research by Tapalova and Zhiyenbayeva (2022) found that AI can increase student engagement by providing appropriate and helpful information during the learning process. This shows that Google Gemini is critical in providing resources that help students understand and apply their acquired knowledge. Fourth, students feel that by using Google Gemini, they can have better discussions in class. Practical discussion in the classroom is an essential component of active learning, where students can exchange different ideas and perspectives. Chen et al. (2023) found that AI can facilitate collaboration between students on group assignments, improving the quality of classroom discussions and interactions. Students in this study felt that Google Gemini helped them participate more actively and effectively in class discussions, ultimately increasing their engagement and understanding of the course material.

Overall, these findings suggest that Google Gemini has excellent potential to improve the quality of learning in higher education environments. Students' positive perception of using Google Gemini as a learning assistant reflects that this technology can benefit their learning process. Thus, integrating Google Gemini into learning can be an effective strategy for improving understanding, efficiency, information relevance, and the quality of discussions in class.

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Perceived Ease of Use (PEOU)

Research findings in the Perceived Ease of Use (PEOU) category show that students have a very positive perception of the ease of using Google Bard as a learning assistant in the classroom. This perception includes several main points that are very important in the learning context. First, students feel that learning to use Google Bard is easy. This shows that the technology is designed with an intuitive and user-friendly interface, which minimizes the learning curve for its users. This shows that this technology is designed with an intuitive and user-friendly interface, which minimizes the learning curve for its users. In the context of this research, students feel comfortable and do not experience difficulties when using Google Gemini, which increases their comfort and desire to continue using this technology in the learning process. Furthermore, students stated that interacting with Google Gemini took little effort. This shows that this technology facilitates efficient and effective interactions, allowing students to focus on learning without being distracted by technical problems research by Lai. (2023) shows that ease of interaction with technology contributes to increasing student engagement and learning motivation. This is relevant to the findings of this research, which state that students feel that Google Gemini makes it easier for them to interact and participate in learning activities.

Students also think Google Gemini is easy to use and does not require special training. This ease of use is essential because it allows for rapid and widespread technology adoption among students. This indicates that Google Google Gemini is well designed to support its use in a learning context. Additionally, students felt that Google Gemini had a user-friendly interface. An intuitive and user-friendly interface ensures that users can quickly understand and use technology without encountering significant obstacles (Lowdermilk, 2013; McKay, 2013). Research by Liu et al. (2020) shows that user-friendly interfaces increase user satisfaction and engagement. In the context of this research, students feel that the Google Gemini interface supports them in learning and facilitates access to the information they need.

Overall, these findings suggest that Google Gemini has excellent potential to improve the quality of learning in higher education environments. Students' positive perception of the ease of use of Google Gemini reflects that this technology can provide a good user experience, increasing their learning engagement and motivation.

Attitude Toward Using (ATU)

Research findings in the Attitude Toward Using (ATU) category show that students have a positive attitude towards using Google Gemini as a learning assistant in the classroom. This attitude includes the view that using Google Gemini in classroom learning is a good idea, motivation to discuss in class using Google Gemini, the feeling that learning in class becomes more fun with Google Gemini, and a positive view of using Google Gemini in the learning process. Research by Venkatesh et al. (2003) supports these findings by showing that users' attitudes toward technology strongly predict intention to use that technology. In this study, students' positive attitudes towards Google Gemini reflect their belief that this technology provides tangible benefits in the teaching and learning process. Students felt that using Google Gemini was a good idea, and they were motivated to use this technology in class discussions, which could increase their participation and involvement in learning. Research by Sawang et al. (2019) shows that a positive attitude towards technology can increase student motivation and engagement. This is in line with the findings of this research, where students felt that studying with Google Google Gemini made the learning process in class more enjoyable. This positive feeling is essential because a pleasant learning experience can increase students' motivation to be more actively involved in the learning process. Additionally, Huang et al. (2020) found positive attitudes toward technology increased learning satisfaction. Students who had a favorable view of using Google Gemini in this study also showed higher satisfaction with the learning process. This positive attitude shows that students accept Google Gemini functionally and emotionally, which is essential for the long-term success of technology integration in learning.

Overall, this study's findings indicate that students have very positive attitudes towards using Google

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Gemini as a learning assistant in the classroom. This attitude includes the belief that Google Gemini is a valuable and fun tool for learning. This positive attitude is essential because it can encourage wider and sustainable technology adoption in education.

Behavioral Intention to Use (BIU)

Research findings in the Behavioral Intention to Use (BIU) category show that students firmly intend to continue using Google Gemini as a learning assistant in their studies. This intention includes a commitment to using Google Gemini, an interest in further exploring its features, a desire to recommend Google Gemini to friends, and a plan to continue using Google Gemini in their learning. This finding is significant because intention to use technology often strongly predicts actual use.

Students' firm intention to use Google Gemini shows that they consider this technology a valuable and easy-to-use tool in their learning process. This is important because positive intentions tend to lead to broader technology adoption and use. Research by Teo and Zhou (2014) found that perceived usefulness, ease of use, and attitudes towards technology significantly influence the intention to use technology in education. This study's results align with these findings, where students who positively perceive Google Gemini also show a solid intention to use it. Students who commit to using Google Gemini are likelier to recommend the technology to their friends, indicating a positive spillover effect on individual perceptions of it. In the context of this study, students who were interested in further exploring Google Gemini's features and planned to continue using this technology indicated that they had positive experiences with Google Gemini. These positive experiences are meaningful because they can increase student engagement and motivation to learn and encourage wider technology adoption in educational settings. Research by Shen et al. (2006) supports these findings by showing that the technology's perceived ease of use and usefulness influence the intention to use educational technology.

Overall, this study's findings indicate that students have a very strong intention to continue using Google Gemini as a learning assistant. This intention was driven by their positive perceptions of its usefulness and ease of use and their positive experiences using this technology.

CONCLUSIONS AND RECOMMENDATION

Based on the research results, in terms of Perceived Usefulness (PU), students feel that Google Google Gemini significantly helps them understand lesson material, increases learning efficiency, and provides relevant and valuable information during the learning process. In the Perceived Ease of Use (PEOU) aspect, students stated that learning to use Google Google Gemini was very easy, interacting with this tool did not require much effort, and did not require special training, which shows a user-friendly interface. Furthermore, in the aspect of Attitude Toward Using (ATU), students have a very positive attitude towards using Google Google Gemini, considering it a good idea and feeling that this tool makes the learning process more fun and exciting. Finally, in the Behavioral Intention to Use (BIU) aspect, students showed a firm intention to continue using Google Gemini in their academic activities in the future, as well as a desire to recommend this tool to their friends.

Furthermore, to optimize the use of Google Google Gemini in learning further, it is recommended that further research involve a broader and more diverse sample. This will allow better generalization of the results and provide a more comprehensive picture of students' perceptions from various backgrounds. In addition, using more complex research methods, such as longitudinal analyses or controlled experiments, can provide deeper insight into the effectiveness and long-term impact of using Google Gemini in learning.

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