# The Effectiveness of use of Artificial Intellegence (AI) in Supporting the Learning of Students Department of Educational Technology State University of Malang

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**Abstract**

Nowadays use *Artificial Intelligence* (AI) has received controversy in various fields, but this research wants to explore the potential of AI in supporting learning. One of the most widely used AI products is Chat GPT (*Generative Pre-trained*). The purpose of this research is to describe the usefulness, convenience, behavioral intentions, and actual use of GPT Chat in learning for students at the Faculty of Education, State University of Malang using the model. *Technology Acceptance Model* **(**TAM). TAM is a theoretical approach to describe the level of acceptance of technology. This research uses a quantitative descriptive approach and data processing uses statistics. The results of this research found that the use of GPT Chat by generation Z State University of Malang students proved effective in supporting their learning. So it was concluded that the average of the 4 variables of usefulness, convenience, behavioral intention and actual use of Chat GPT in supporting the learning of Educational Technology students at the State University of Malang was included in the good/high category with an average score (Mean) of 57.00 and a percentage of 71.25%.

**Keywords :** *Chat GPT, TAM, Learning*

## 1. Introduction

Technology is currently developing very quickly. Artificial intelligence or *Artificial Intelligence* (AI) is one example of the technological progress in question. AI is a field of computer science that can act as something that can think like humans (Serdianus, S., & Saputra, 2023). In education, *Artificial Intelligence* offers a new learning environment and new methods. Initially AI was used as a learning medium. AI can be used to search for various learning resources, assist interactions in learning, and provide learning materials. One of the most widely used AI products is Chat GPT (*Generative Pre-trained*).

Chat GPT (*Generative Pre-trained*) is one of the applications of AI who can interact in text-based conversations (R. Santhosh; M. Abinaya; V. Anusuya; D. Gowthami, 2023). Its use in the world of education provides great potential benefits, such as increasing student engagement, improving learning experiences, and improving teaching methods (Diantama, 2023). According to data published on the web toptools4learning.com in 2023 Chat GPT is in 4th place in the list of 100 best generative chat tools. This data is clear evidence that Chat GPT is widely known and used regularly by people all over the world, including in Indonesia. Through the development of technology, the use of learning resources will become wider and not only depend on educators. Although there are many advantages to using Chat GPT in education, there are also disadvantages and difficulties. Some educators are concerned about the reliability and quality of the information offered, as these GPT Chats generate replies based on pre-trained data, which is not always current or completely correct (Kalla, D., & Smith, 2023). Although technology is helpful in the field of education, especially in terms of making

learning more accessible (Schlosser, L., Hood, C. E., Hogan, E., Read, B., & Gentile-Mathew, 2022), more innovative learning can spark students' curiosity and helping them find new information (Isma, C. N., Rahmi, R, & Jamin, 2022), and faster access to information (Mutia, F., & Cahyani, 2021). The current generation must take advantage of advances in digital technology that will make everyday life easier (Ikhsan., 2023). Given its importance, it is critical to investigate the acceptance of Chat GPT technology and individuals' intentions to use and use Chat GPT technology. Acceptance and use of Chat GPT can be measured using *Technology Acceptance Model* (TAM) is one of the theoretical approaches to describe the level of acceptance of technology.

According to (Popenici, SAD, & Kerr, 2017) artificial intelligence or *Artificial Intelligence* (AI) is a computer system capable of human-like processing such as, learning, adaptation, synthesis, self-correction, and use of data for complex processing tasks. The most widely used implementation of AI in Indonesia is in the field *natural languange processing* and *vision* a kind of Chatbot. According to (Smutny & Schreiberova, 2020) Chatbot is a type of artificial intelligence technology or *artificial intelligence* (AI) that interacts with users in a natural way using text and voice conversations.

One of the AI products is Chat GPT (*Generative Pre-trained*). The first developer of Chat GPT is *OpenAI*, a startup company from the United States that specializes in the creation and development of AI-based technology. (Wibowo T, U. S. H., Akbar F, Ilham S, R., & Fauzan M, 2023) Chat GPT is an AI chatbot that can communicate and help users with various tasks (Faiz, A., & Kurniawaty, 2023). GPT chat can help learning in education by providing access to material and information that is broader and easier to understand. For example, it can be used as a virtual assistant to answer questions or as an online tutor to help understand complex concepts. Based on previous research, generation Z students are more likely to use new technology for learning than previous generations. Generation Z is more open to innovative and interactive learning tools such as Chat GPT. GPT Chat helps generation Z students learn in a way that suits their learning style and achieves learning goals.

TAM theory explains how technology users behave when using new technology. The purpose of TAM is to analyze and understand the factors that influence the use of computer technology (Davis, 1989). TAM has two main variables, namely perceived usefulness *(perceived usefulness)* and perceived ease of use *(perceived ease of used).* Perception of usefulness (*perceived usefulness*), perception of user convenience (*perceived ease of use*), attitudes towards consumers (*attitude toward using*), user intent (*behavioral intention to use*) and finally shows real users of the system (*actual system use*) are the 5 TAM variables and are used to predict user acceptance (Davis, 1989). In 1996 Venkatesh and Davis changed TAM to adapt it to technological developments. One omitted variable is attitude towards users (*attitude toward using*) due to the low internal consistency of this variable. This revised TAM model has been proven to be more consistent and accurate in predicting user acceptance of technology.

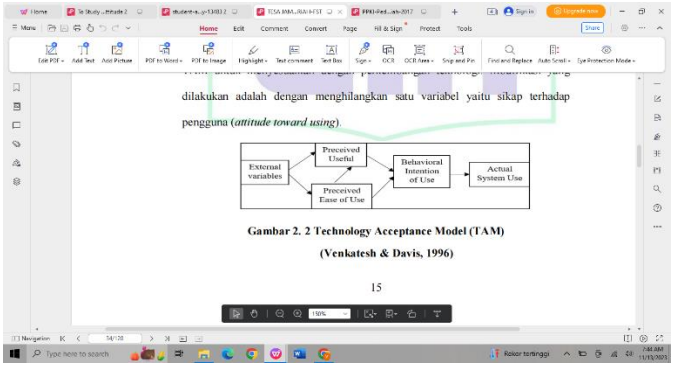


**Figure 1. *Technology Acceptance Model* (TAM) (Venkatesh & Davis, 1996)**

## Learning

Learning is an effort to educate learners (Degeng, 1989 in Khawarizmi et al., 2019). This learning activity allows students to learn more effectively and efficiently. Many learning experts have attempted to improve the quality of learning. Learning researchers classify variables of concern, these variables are most important if they are related to activities in developing learning theories and principles. Among the many learning researchers who classify learning into three main learning variables are Reigeluth and Merrill (Reigeluth, 1983; Degeng, 1989 in Khawarizmi et al., 2019). These three variables are: 1) learning conditions, 2) learning methods, and 3) learning outcomes

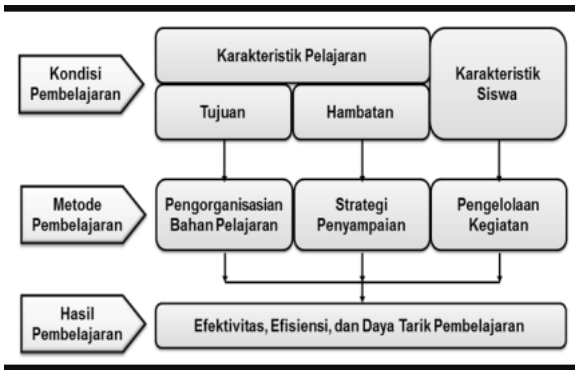


**Figure 2. Learning Theoretical Framework**

GPT chat has great potential in supporting learning methods, namely by organizing learning materials in a structured manner and providing effective delivery strategies to students. GPT chat can do this by providing a summary of the material, providing relevant information, and providing explanations that are clear and easy for students to understand. This will help students organize and understand the learning material. And in the learning process, GPT Chat can contribute to the organization and delivery strategy by providing up-to-date information and helping to design a more interactive and effective approach.

## 2. Method

This research uses a quantitative descriptive approach because the data is given in the form of numbers and analyzed statistically. In this research there are 4 variables, namely perceived usefulness, perceived ease, behavioral intention, and actual use of students from the

Department of Educational Technology, State University of Malang regarding the use of Chat GPT in supporting learning using the approach. *Technology Acceptance Model* (TAM).

The population in this study were all students of Educational Technology, Faculty of Education, State University of Malang. In this research, researchers used a sampling method *stratified random sampling* or stratified random sampling. Sampling was carried out by dividing the population into four strata based on generation (2020, 2021, 2022, 2023). Then samples were randomly selected from each stratum and a sample of 80 Educational Technology students was obtained. The data collection technique used in this research uses a questionnaire whose validity and reliability have been tested. The questionnaire includes 20 statements submitted to measure student scores. Scale *likert* used to divide the variables to be measured into indicator variables.

**Table 1. Alternative Instrument Answer Scores**

| Positive Statements | |
|---|---|
| Alternative Answers | Score |
| Strongly Agree (SS) | 4 |
| Agree (S) | 3 |
| Disagree (TS) | 2 |
| Strongly Disagree (STS) | 1 |

After that the data that has been obtained is processed using quantitative analysis techniques with a descriptive statistical approach and assisted by the program *SPSS 25 for windows.*

## 3. Results and Discussion

### 3.1 Result

This research aims to describe the usefulness, convenience, behavioral intention, and actual use of GPT Chat in learning for students at the Faculty of Education, State University of Malang using the model *Technology Acceptance Model* **(**TAM).

#### A. Description of Usage Frequency Distribution

**Table 2. Distribution of Trends in Mean Scores for GPT Chat Usability**

| No | Range | Category | Frequency | Percent (%) |
|---|---|---|---|---|
| 1 | X > 28,5 | Very good/Very high | 67 | 83,75 |
| 2 | 20 s/d 28,5 | Good/High | 10 | 12,5 |
| 3 | 11,5 s/d < 20 | Fair/Moderate | 2 | 2,5 |
| 4 | X <11,5 | Less/Low | 1 | 1,25 |
| | Amount | | 80 | 100 |

Based on the table, it can be seen that of the 80 respondents who answered the trend of using Chat GPT, 67 respondents (83.75%) were in the very good category, 10 respondents (12.5%) were in the good category, 2 respondents (2.5%) were in the fair category or moderate and 1 respondent (1.25%) in the poor or low category.

MeanIdeal Maximum Score ×100%= 24,5032 x 100% = 76.56 or 76.6%

Based on these calculations, it can be concluded that the usefulness of Chat GPT is in the very good category with an average score of 24.50 with a percentage of 76.6%.

**B. Overview of Convenience Frequency Distribution**

**Table 3. Distribution of Trends in Mean GPT Chat Ease Scores**

| No | Range | Category | Frequency | Percent (%) |
|---|---|---|---|---|
| 1 | X > 14,5 | Very good/Very high | 30 | 37,5 |
| 2 | 10 s/d 14,5 | Good/High | 49 | 61,25 |
| 3 | 5,5 s/d < 10 | Fair/Moderate | 1 | 1,25 |
| 4 | X < 5,5 | Less/Low | 0 | 0 |
| | Amount | | 80 | 100 |

Based on table 4.7, it can be seen that of the 80 respondents who answered the trend toward ease of GPT Chat, 30 respondents (37.5%) were in the very good category, 49 respondents (61.25%) were in the good category, 1 respondent (1.25%) was in the sufficient or moderate.

MeanIdeal Maximum Score ×100%= 13,6416 x 100% = 85.25 or 85.3%

Based on these calculations, it can be concluded that the ease of GPT Chat is in the good category with an average score of 13.64 with a percentage of 85.3%.

**C. Description of Frequency Distribution of Behavioral Intentions**

**Table 4. Distribution of Average Score Trends for GPT Chat Behavior Intentions**

| No | Range | Category | Frequency | Percent (%) |
|---|---|---|---|---|
| 1 | X > 17,75 | Very good/Very high | 3 | 3,75 |
| 2 | 12,5 s/d 17,75 | Good/High | 33 | 41,25 |
| 3 | 7,25 s/d <12,5 | Fair/Moderate | 38 | 47,5 |
| 4 | X < 7,25 | Less/Low | 6 | 7,5 |
| | Amount | | 80 | 100 |

Based on table 4.11, it can be seen that of the 80 respondents who answered the behavioral intention tendency to use Chat GPT, 3 respondents (3.75%) were in the very good category, 33 respondents (41.25%) were in the good category, 38 respondents (47.5%) in the sufficient or moderate category and 6 respondents (7.5%) in the poor category.

MeanIdeal Maximum Score ×100%= 12,1520 x 100% = 60.75 or 60.8%

Based on these calculations, it can be concluded that the behavioral intention to use Chat GPT is in the sufficient or moderate category with a mean score of 12.15 with a percentage of 60.8%.

**D. Overview of Real Usage Frequency Distribution**

**Table 5. Distribution of Average Score Trends for Real Use of GPT Chat**

| No | Range | Category | Frequency | Percent (%) |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1 | X > 17,25 | Very good/Very high | 0 | 0 |
| 2 | 13,5 s/d 17,25 | Good/High | 0 | 0 |
| 3 | 9,75 s/d <13,5 | Fair/Moderate | 5 | 6,25 |
| 4 | X < 9,75 | Less/Low | 75 | 93,75 |
| | Amount | | 80 | 100 |

Based on table 4.15, it can be seen that of the 80 respondents who answered the trend of actual use of Chat GPT, 5 respondents (6.25%) were in the moderate or moderate category, 75 respondents (93.75%) were in the poor or low category.

MeanIdeal Maximum Score ×100%= 6,7112 x 100% = 55.92 or 55.9%

Based on these calculations, it can be concluded that the actual use of Chat GPT is in the less or low category with an average score of 55.92 with a percentage of 55.9%.

**Table 6. Results of data analysis per variable: Usefulness, Convenience, Behavioral Intention, and Usage**

| No. | Variable | Percentage | Category |
|---|---|---|---|
| 1. | Usage | 76,6% | Very Good/Very High |
| 2. | Convenience | 85,3% | Good/High |
| 3. | Behavioral Intentions | 60,8% | Good/High |
| 4. | Real Use | 55,9% | Less/Low |

## 3.2 Discussion

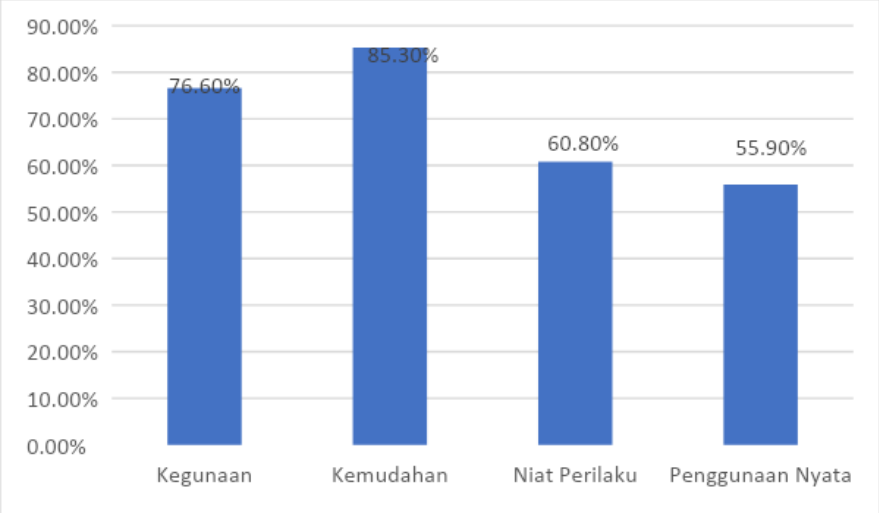


**Figure 3. Data for each variable**

The diagram above shows the highest research results on the convenience variable with a percentage of 85.3% in the very good or very high category. Meanwhile, the lowest research results on the real use variable with a percentage of 55.9% were in the less or low category.

In the learning process, Chat GPT is a tool that helps students understand the material and answer their questions (Suharmawan, 2023). This theory can be related to David Ausubel's theory of meaningful learning. GPT chat can help students learn meaningfully by providing relevant and accurate information. This information can help students connect new information with previous knowledge, so that students can understand the information more deeply and meaningfully.

Convenience will have an impact on behavior, the easier it is to use, the more people will use it. It can be concluded that the ease of use of the system can save time and energy because users believe that the system is easy to understand (Davis, 1989). With the high ease of use of GPT Chat, GPT Chat has the potential to become an effective learning tool for Educational Technology students.

Behavioral intentions are in the good or high category because students can use it at any time, use it under any conditions, use it continuously, and hope to use it continuously. This could be a positive sign for educational technology where strong Chat GPT innovation can really provide results for the intended users and Chat GPT will certainly have a bright future and will be a revolutionary innovation for students studying in higher education (Tiwari, K. C., & Bhat, 2023).

If someone thinks that the system is easy to use and will increase their productivity, then they will be satisfied using the system, which is reflected in the actual user situation (Tangke, 2004). Based on this quote, student satisfaction with using Chat GPT is influenced by student perceptions about the ease of use and benefits of the system. If students feel that GPT Chat is easy to use and can increase their productivity, then students are more likely to actually use GPT Chat.

However, in reality, the results of data analysis regarding the real use of GPT Chat still need to be improved. Although the results of data analysis on convenience show a very good category, usability and behavioral intentions are in the good category, this is not always visible in real use. This real use can be related to the function of Chat GPT itself, students are less willing to fully engage with Chat GPT who are not as intelligent as humans (Liu, G., & Ma, 2023). On the other hand, there are regulations from institutions that still limit the use of GPT Chat in academic activities, which means that Educational Technology students still comply with these regulations.

## 4. Conclusion

This research found that the use of GPT Chat by generation Z State University of Malang students proved to be effective in supporting their learning. Based on the results of the research and discussion, it can be concluded that the mean variables of usefulness, convenience, behavioral intention and actual use of Chat GPT in supporting the learning of Educational Technology students at the State University of Malang are included in the good/high category with an average score (Mean) of 57.00 and a percentage of 71 .25%. Judging from each variable, the following conclusions can be drawn

1. Educational Technology students feel the use of Chat GPT in finding lecture material more quickly, improving learning performance, increasing productivity, increasing active learning, increasing creativity, making it easier to do college assignments so that knowledge and skills increase, and overall the use of Chat GPT is very useful for students in the category very good or very high with a mean score of 24.50, percentage 76.6%.

2. Educational Technology students find it easy to understand, easy to use, easy to control and easy to remember when using it in the good or high category with a mean score of 13.64, percentage of 85.3%.

3. Educational Technology students can use Chat GPT at any time, use it under any conditions, continue to use it, and hope to continue using it. It is in the good or high category with an average score (Mean) of 12.15, percentage of 60.8%.

4. Educational Technology students are not yet optimal in actual use of Chat GPT in the learning process and the duration of Chat GPT use is in the less or low category with an average score (Mean) of 6.71, percentage of 55.9%.

Based on the conclusions of the research results, there are several suggestions for generation Z students to use Chat GPT as a learning tool such as searching for information, summarizing material, practicing explaining concepts in their own words and using Chat GPT to get new ideas related to topics. learning. Develop critical thinking skills in using Chat GPT, students are able to evaluate the information provided and filter its accuracy.

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