GPT Chat: Useful or Not in Supporting Learning in Higher Education

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ABSTRACT

Background. Chat GPT is a natural language model developed by OpenAI, based on the GPT (Generative Pretrained Transformer) architecture. It is renowned for its ability to generate text that closely resembles human writing, including in chat and conversational interactions. In the growing digital era, artificial intelligence technology is increasingly playing an important role in various fields, including education.

Purpose. This study aims to identify the benefits of using Chat GPT in learning in higher education and how its use can improve the quality of learning, accelerate the assessment process, increase student engagement, improve teaching efficiency, and facilitate student understanding.

Method. The research method used is quantitative by using google form which will produce data in the form of numbers. By using google form, a questionnaire will be made and distributed to students in higher education.

Results. The results show that the use of Chat GPT has significant benefits in learning in higher education. The use of Chat GPT can improve the quality of learning, accelerate the assessment process, increase student engagement, and improve teaching efficiency.

Conclusion. The conclusion from this study is that the use of Chat GPT in a college setting can be beneficial in supporting learning in an innovative and effective way. However, the limitation of this study is that the researcher was only able to conduct a study of a few students in higher education. Therefore, the researcher hopes that future research can be conducted with a wider scope. The researcher also recommends that future research can be a reference material in conducting research related to the utilisation of Chat GPT in supporting learning in higher education.

KEYWORDS

Artificial Intelligence, College, Benefits, Utilization, Gpt Chat, Learning, College

INTRODUCTION

The growth of artificial intelligence (AI) technology has changed the way humans interact with technology, and one of the most prominent AI devices is the Chatbot (Abbass, 2021). A Chatbot or Chat Robot is a computer programme designed to have conversations with humans,

Ratri Candrasari, Juan Makulua, Yessicka Noviasmy, Korlina Makulua, Siminto

be it through text messages, voice or other media (Wang dkk., 2018). Along with technological advances, chatbots are increasingly integrated with social media platforms, instant messaging applications, and websites (Vimmerstedt dkk., 2019). One of the most popular types of chatbot today is ChatGPT, which is a language model developed by OpenAI using the GPT-3.5 architecture. ChatGPT is designed to understand the context of a conversation and provide more natural and humanised responses, so that users can interact with ChatGPT as if talking to a human.

In today's digital era, the use of Chat GPT in supporting learning in higher education is based on the need to improve the effectiveness and efficiency of learning (Zhu dkk., 2021). Currently, universities around the world are facing the challenge of optimising technology to help students gain a better understanding of the learning material being taught (DeGregorio dkk., 2019). In recent years, chatbot technology has been increasingly used in various sectors including education (Sarid, 2018). Chatbot is used as a learning tool that can provide real-time and fast information to users. However, traditional chatbot technology still has limitations in providing relevant responses and understanding the questions asked by users. Therefore, the development of ChatGPT as a technology and intelligent can be a promising alternative in supporting learning in higher education.

In learning in higher education, there are two main approaches, namely the teacher-centered learning approach and the student-centered learning approach (Reichert & Torney-Purta, 2019). The teacher-centered learning approach emphasizes the role of teachers in providing information and directing students, while the student-centered learning approach emphasizes the role of students in constructing knowledge through interactions with teachers and the learning environment (Zou, 2020). The benefits of Chat GPT in a student-based learning approach are that the use of Chat GPT can provide benefits in a student-based learning approach. For example, Chat GPT can be used as a virtual assistant to assist students in learning independently, provide explanations, and provide quick and timely feedback (Nur Suryawan & Premitasari, 2021). In addition, Chat GPT can also be used as a tool in facilitating online group discussions, where students can actively participate in the learning process (Carless & Boud, 2018). The benefits of Chat GPT in a teacher-based learning approach are that the use of Chat GPT can also provide benefits in a teacher-based learning approach. Chat GPT can be used by teachers to make learning materials more interesting and easily understood by students. In addition, Chat GPT can also assist teachers in providing feedback quickly and accurately, thus increasing the effectiveness of learning.

Since the invention of human-computer interface applications, the use of social cues in computer interaction has continued to grow (Weinstein, 2018). Chatbots are created to mimic/replicate interpersonal conversations with a high degree of personalization, both in the conversation and in the potential they can present to users (Saniuk dkk., 2020). Chatbot, refers to the word "Chatting Robot" (Sono dkk., 2019). Thus, chatbots can be perceived as one of the most advanced and current forms of social interaction between humans and computers (Kingsbury & Hong, 2020). Chatbots are found to enhance the online consumer experience through increasing the perception of employee presence and the feeling of being served. In addition, there are also concerns about using this technology as a substitute for human interaction in learning (Qiu dkk., 2018). Although GPT Chat can help facilitate discussions in online classes, direct human interaction is still necessary to build a close relationship between lecturers and students.

Chatbot (or Chatter Bot) is a software (Neese, 2018) that can communicate to humans like a virtual assistant that can function to be able to answer several questions asked by users and can respond to any questions given (Kepuska & Bohouta, 2018). Currently, the use of Chatbot is very popular and has been applied such as SIRI by Apple, Inc, and Alexa by Amazon, Inc. Chatbotini has been implemented in various fields, one of which is the field of education to support students
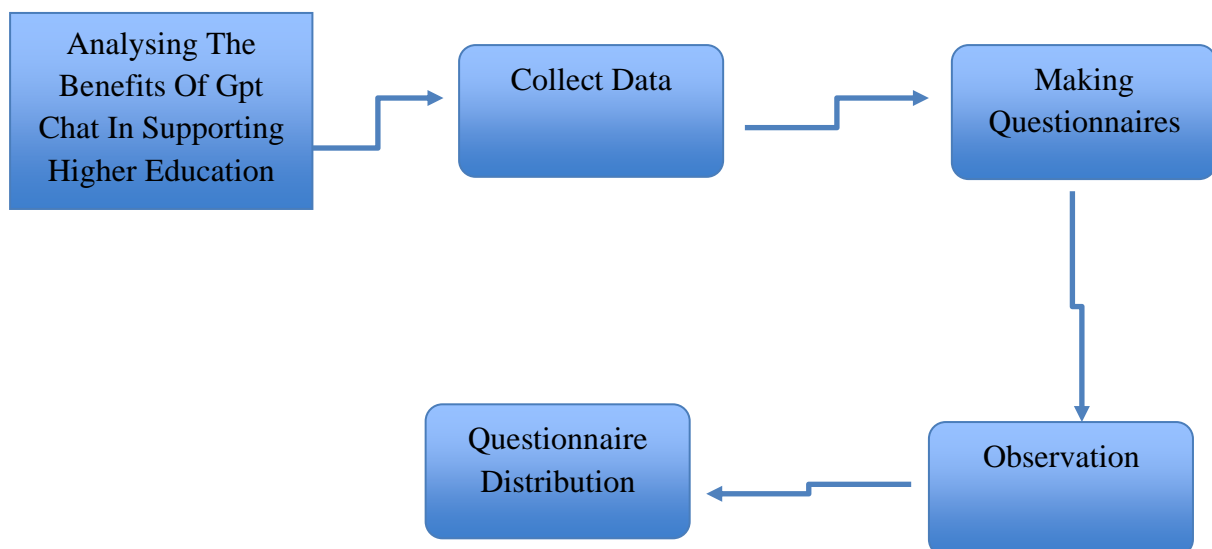
learning and academic consultation (Donnelly dkk., 2020). This Chatbot technology can be considered as an important innovation for e-learning, besides that it can be the most innovative solution to fill the gap between technology and education (Al-Fraihat dkk., 2020). Higher education seeks to improve the model of education by adjusting to the needs of students, one way is to develop a model of education by utilizing information and communication technology (Chumachenko dkk., 2019). Information and communication technology has changed the paradigm of society, it can even change the way we communicate, and this is a contribution to sustainable development in the education sector.

The use of ChatGPT can help students to overcome problems in learning, such as difficulty understanding the material or solving problems (Sanmamed & Chen, 2018). In addition, ChatGPT can help improve interaction between students and teachers, so that students can get feedback quickly and accurately (Nagoudi dkk., 2018). However, the use of ChatGPT also has some disadvantages, such as the risk of plagiarism or concerns about losing students' ability to think critically (Bailey, 2018). Therefore, the use of ChatGPT should be done carefully and by considering students' needs and learning objectives. The use of ChatGPT in college learning can provide benefits if used correctly and targeted (Guo dkk., 2023). However, it is important to develop appropriate strategies to maximize the benefits of this technology and reduce the risks associated with its use.

Limitations of Chat GPT in Supporting Learning in Higher Education i.e., Although Chat GPT has clear advantages in assisting the learning process in higher education, there are some limitations that need to be noted (Nayak dkk., 2018). First, Chat GPT still needs further development to be able to understand more complex contexts and provide more precise and accurate answers (Ebisuya & Briscoe, 2018). Second, the use of Chat GPT should not replace the interaction between lecturers and students, as such direct interaction is crucial in building a better and deeper understanding of the course material (Yang dkk., 2018). The advantages of Chat GPT in Supporting Learning in Higher Education are that Chat GPT can help students in learning course materials, provide suggestions and solutions to problems faced by students, and help students to more easily interact with lecturers and staff in higher education (Biber dkk., 2020). In distance learning, Chat GPT can be an alternative to answer questions and help students in the process of self-learning (Gharby dkk., 2020). In addition, Chat GPT can also assist students in identifying grammatical and writing errors in their assignments, which can improve their English writing and speaking skills.

RESEARCH METHODOLOGY

The research method used is quantitative. The aim is to provide objective and measurable information about the phenomenon under study, so that the research results can be used as a basis for making more accurate and effective decisions or planning efektif (Blank & Deb, 2020). Quantitative research is a type of scientific research that uses data collection methods and statistical analysis to answer research questions or test hypotheses (Enders dkk., 2020). This research is based on numbers, measurable data, and mathematics. Quantitative methods are often used to measure variables and analyse the relationship between them (Himmi & Hatwin, 2018). Quantitative research typically uses samples drawn from a specific population to produce generalisations about that population (İlhan & Kıymaz, 2020). The resulting data were then analysed using appropriate statistical techniques, such as t-test, analysis of variance (ANOVA) test, regression, and so on.

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│  Analysing The  │      │             │      │                 │
│  Benefits Of Gpt│ ───► │ Collect Data│ ───► │     Making      │
│ Chat In Supporting│    │             │      │  Questionnaires │
│ Higher Education│      │             │      │                 │
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The topic of this research is to see what are the benefits of Chat GPT in student learning in higher education. The method used in this research is quantitative method. This research is conducted in several universities that aim to see the possibility of using Chat GPT (Generative Pretrained Transformer). Data collection can be done by distributing questionnaires to students to find out how much the applicability of Chat GPT is for students and also making observations to find out in advance the knowledge, the object of consideration, the learning objectives, the problem of the task, prepare observations, determine the necessary secondary data and also record the results of observations (Correll dkk., 2018). For example, when researching students at some nearby colleges.

RESULT AND DISCUSSION

Chat GPT (Generative Pre-trained Transformer) is an artificial intelligence-based natural language model developed by OpenAI. It is designed to understand and produce complex human language such as in conversation, writing, and documents. Chat GPT uses deep learning technology to learn and understand human language patterns. The model is trained using a large dataset consisting of millions of sentences and texts from various sources. During the training process, Chat GPT learns the syntactic and semantic structures of human language, so that it can produce text that is similar to human language. Chat GPT can be used for various applications, such as chatbots, language translators, automatic writers, and personal assistants. In the context of a chatbot, Chat GPT can be programmed to understand requests and questions from users and provide appropriate and relevant responses.

Chat GPT also has the ability to mimic certain language styles, such as formal or informal language styles, or language from a particular era. This allows Chat GPT to be used for more creative purposes, such as generating stories or poems. However, while Chat GPT has very advanced capabilities in understanding human language, it also has limitations. Chat GPT has no real-world knowledge and cannot understand the specific context in a conversation. Therefore, the use of Chat GPT needs to be limited and controlled so as not to provide inappropriate or misleading responses. Chat GPT is specifically designed to be used in a conversational context, which allows it to communicate with humans naturally and respond to questions and requests in a meaningful and appropriate way. This model can be used for a variety of applications, including chatbots, virtual assistants, and other automated systems that require good natural language understanding.

Research shows that Chat GPT can be useful in supporting learning in higher education. In a study conducted by Liu and his team (2021), they developed a GPT Chat system that can provide automatic responses to questions asked by students in online discussions in class. The results showed that the use of Chat GPT system can help increase students' participation in online discussions and also improve their ability to understand lecture materials. In addition, GPT Chat can also be used to improve the effectiveness of virtual tutors. In a study conducted by Liang and his team (2021), they developed a virtual tutor system based on GPT Chat to assist students in understanding course materials. The results showed that the use of this virtual tutor system can improve students' understanding of course materials and also improve their final grades.

However, while GPT Chat has the potential to help improve learning in higher education, there are still some challenges to overcome. One of them is the limitation in context understanding. Chat GPT can only respond based on the information provided by the user. If the user does not provide enough information or is unclear, then Chat GPT cannot provide an appropriate response. In addition, GPT Chat can also cause problems in terms of security and privacy. Chat GPT system used in higher learning should pay attention to data security and privacy issues, especially if the system will be used to access sensitive information such as students' personal data.

The use of Chat GPT in learning can provide many benefits, including:

One, Increase engagement and interaction: GPT chat can help students to interact and engage in online learning. Students can ask for help, ask questions, and get quick and relevant responses.

Two, Improving time efficiency: GPT Chat can help students to save time by providing instant answers without having to wait for replies from lecturers or administrative staff.

Three, Improving learning experience: GPT Chat can help students to have a more personalised learning experience, according to their needs and preferences.

However, there are some drawbacks to using Chat GPT in learning, including:

One, Ability limitations: Although Chat GPT can produce responses similar to humans, it still has limitations in understanding complex or informal language. This may lead to inaccurate or imprecise responses.

Two, Dependence on technology: The use of Chat GPT may make students overly dependent on technology, and unable to develop interpersonal or critical thinking skills.

Three, Limitations in providing feedback: Chat GPT can only provide limited feedback, and cannot provide a comprehensive assessment of student learning outcomes.

Educational institutions need to consider several things before deciding to adopt Chat GPT in learning, including:

One, Ensuring that Chat GPT can be used effectively in specific learning contexts, e.g. for simple material or for routine tasks.

Two, Integrating Chat GPT with broader learning strategies, including the development of interpersonal and critical thinking skills.

Three, Provide adequate training and support for students and teaching staff in using Chat GPT effectively.

From the research results above, it can be concluded that Chat GPT can be useful in supporting learning in higher education. The use of Chat GPT can help increase student participation in online discussions, increase the effectiveness of virtual tutors, and also improve student understanding of course materials. However, before implementing Chat GPT in higher education learning, it is important to consider the challenges and risks that may arise, such as limitations in context understanding and data security and privacy issues. In addition, it is also

necessary to consider how to integrate Chat GPT with the existing learning system in higher education.

In addition, the different characteristics of students may also affect the effectiveness of using Chat GPT in supporting learning. Students who prefer independent and autonomous learning may utilise Chat GPT better, whereas students who prefer learning with direct interaction with lecturers and classmates may find it less helpful. Traditional chatbot technology still has limitations in providing relevant responses and understanding the questions asked by users. Therefore, the development of ChatGPT as a generative and intelligent chatbot technology can be a promising alternative in supporting learning in higher education.

No	Questions	SA	A	D	SD
1.	Chat GPT is a natural language model that can be used to aid learning in higher education.	59,1%	40,9%	0%	0%
2.	With Chat GPT's ability to generate human-like text, it can help improve students' speaking and writing skills.	31,8%	59,1%	9,1%	0%
3.	Chat GPT can be used to create exam questions or assignments, so it can help lecturers prepare materials and assess student performance.	31,8%	63,6%	4,5%	0%
4.	By asking questions to Chat GPT, students can access additional information about the topics they are studying.	40,9%	50%	4,5%	4,5%
5.	Chat GPT can provide instant feedback on students' writing, so they can correct their mistakes quickly and effectively.	36,4%	50%	9,1%	4,5%
6.	Lecturers can use Chat GPT to develop and update their course materials, making it easier for students to understand and learn the material.	31,8%	59,1%	9,1%	0%
7.	Chat GPT can be used to generate summaries of long texts, making it easier for students to understand and learn the material.	22,7%	68,2%	9,1%	0%
8.	GPT Chat can be used as a tool in online group discussions, helping students clarify their thoughts and answer their peers' questions.	36,4%	54,5%	9,1%	0%
9.	Chat GPT can help students expand their vocabulary and understand difficult vocabulary.	36,4%	54,5%	9,1%	0%
10.	GPT Chat can help prepare presentations by providing feedback on grammar and word usage.	27,3%	68,2%	0%	4,5%

11.	Chat GPT can assist students in finding and accessing relevant references for their assignments.	36,4%	50%	13,6%	0%
12.	Chat GPT can assist students in understanding and analyzing statistical data.	36,4%	54,5%	4,5%	4,5%
13.	Chat GPT can assist lecturers in identifying areas where students need additional help in understanding the material.	36,4%	59,1%	0%	4,5%
14.	Chat GPT can be used to develop students' academic writing skills.	36,4%	45,5%	18,2%	0%
15.	GPT Chat can help students understand the structure and format of academic papers.	27,3%	54,5%	13,6%	4,5%
16.	GPT Chat can be used to build connections between students and lecturers, as students can ask questions and receive quick feedback.	22,7%	63,6%	13,6%	05
17.	It can help students prepare for exams by providing relevant information and answering questions about exam material.	36,4%	54,5%	9,1%	0%
18.	Chat GPT can help students in understanding difficult material by providing clear and easy-to-understand explanations.	27,3%	68,2%	4,5%	0%
19.	GPT Chat can assist lecturers in overcoming challenges in distance learning by providing support and assistance in student-lecturer interaction.	31,8%	59,1%	9,1%	0%
20.	GPT Chat can be used to assist students in preparing essays and papers.	40,9%	50%	4,5%	4,5%

Table 1. Results Of Questionnaire Distribution

Notes:

SA = Strongly Agree

A = Agree

D = Disagree

SD = Strongly Disagree

In the table above there are several questions about the benefits of Chat GPT in learning for college students. From the table there are several questions that make it easier for researchers to examine how useful GPT Chat is for students and lecturers in supporting learning in higher education. The questions asked were 20 questions which contained the utilization of Chat GPT for students and lecturers in higher education. The question that states that Chat GPT is a natural language model that can be used to help learning in higher education with a percentage of 59.1% by reaching the category strongly agree. The table above says that with Chat GPT's ability to produce

human-like text, it can help improve students' speaking and writing skills, gaining a percentage of 31.8% by reaching the strongly agree category.

The researcher also examined questions 14, 15, and 20 which said that Chat GPT can help students in understanding, developing and preparing academic writing essays. From these four questions, researchers obtained different percentages, namely 36.4%, 27.3% and 40.9% in the strongly agree category. Furthermore, questions 3,6 and 19 contain that Chat GPT can be used to create exam questions or assignments, so that it can help lecturers prepare material and assess student performance. Lecturers can use Chat GPT to develop and update their course materials, making it easier for students to understand and learn the material. Chat GPT can help lecturers in overcoming challenges in distance learning by providing support and assistance in student-lecturer interaction, all three obtained a percentage of 31.8% in the strongly agree category. In question 4, it was mentioned that, by asking questions to the GPT Chat, students can access additional information about the topics they are studying, which received a percentage of 40.9%.

Furthermore, questions number 5,8,9,11,12,13 and 17 Researchers also examined the benefits of GPT chat used by lecturers and students in supporting learning, from this question obtained a percentage of 36.4% in the strongly agree category. The next question mentions that by asking questions to Chat GPT, students can access additional information about the topics they are studying by obtaining a percentage of 22.7% and also at number 16 it is stated that Chat GPT can be used to build connections between students and lecturers, because students can ask questions and receive quick feedback, obtaining a percentage of 22.7% with a strongly agreed category. In numbers 10, 15 and 18 it was found that GPT chat has different benefits, namely Chat GPT can help students understand difficult material by providing clear and easy-to-understand explanations. Chat GPT can help students understand the structure and format of academic papers. Chat GPT can help students understand difficult material by providing clear and easy-to-understand explanations, obtaining the same percentage of 27.3% in the strongly agree category.

Researchers also examined that Chat GPT is a natural language model that can be used to assist learning in higher education with a percentage of 40.9% in the agree category. Furthermore, Chat GPT can be used to develop students' academic writing skills with a percentage of 45.5% in the agreed category. In questions 2, 13, 19, showing the benefits of chat gpt in learning for students and lecturers, it obtained a percentage of 59.1% in the agreed category. The next questions 3 and 16 stated that gpt chat helps students or lecturers in preparing material and building connections between the two with a percentage of 63.6% in the agreed category.

In questions 4, 5, 11, and 20 which state that chat gpt helps students get information quickly that is relevant and effective. From the 4 questions above, a percentage of 50% can be obtained in the agreed category. Then the researcher also examined numbers 7,10 and 18 which stated that chat gpt provides feedback to students to understand and learn material, grammar and word usage by obtaining a percentage of 68.2% in the agreed category. Furthermore, 8,9,12 and 17 stated that Chat GPT can be used as a tool in online group discussions, helping students clarify their thoughts and answer their colleagues' questions, Chat GPT can help students expand their vocabulary and understand difficult vocabulary by obtaining a percentage of 54.5% in the agreed category. Finally, number 14 stated that Chat GPT can be used to develop students' academic writing skills with a percentage of 45.5% in the agreed category.

Researchers also conducted research on questions number 2,5,6,7,8,9, and 17 that Chat GPT has many benefits for students such as getting relevant and effective information with a percentage of 9.1% obtaining a disagree category. Furthermore, 3,4,12, and 20 mentioned that Chat GPT is useful for students and lecturers in preparing materials, essays, and papers with a percentage of

4.5% disagreeing. Furthermore, questions number 11,15, and 16 which can build connections between lecturers and students in learning with a percentage of 13.6% obtained a disagree category. In questions 1, 10, and 13, it states that responders did not choose or the percentage in the disagree category was 0%. In this category, only a few answers from responders because previously many chose to agree or strongly agree. Furthermore, questions 4,5,10,12,13,15, and 20, obtained a percentage of 4.5% in the strongly disagree category. In questions 1,2,3,6,7,8,9,11,14,16,17,18, and 19, obtained a percentage of 0% in the strongly disagree category.
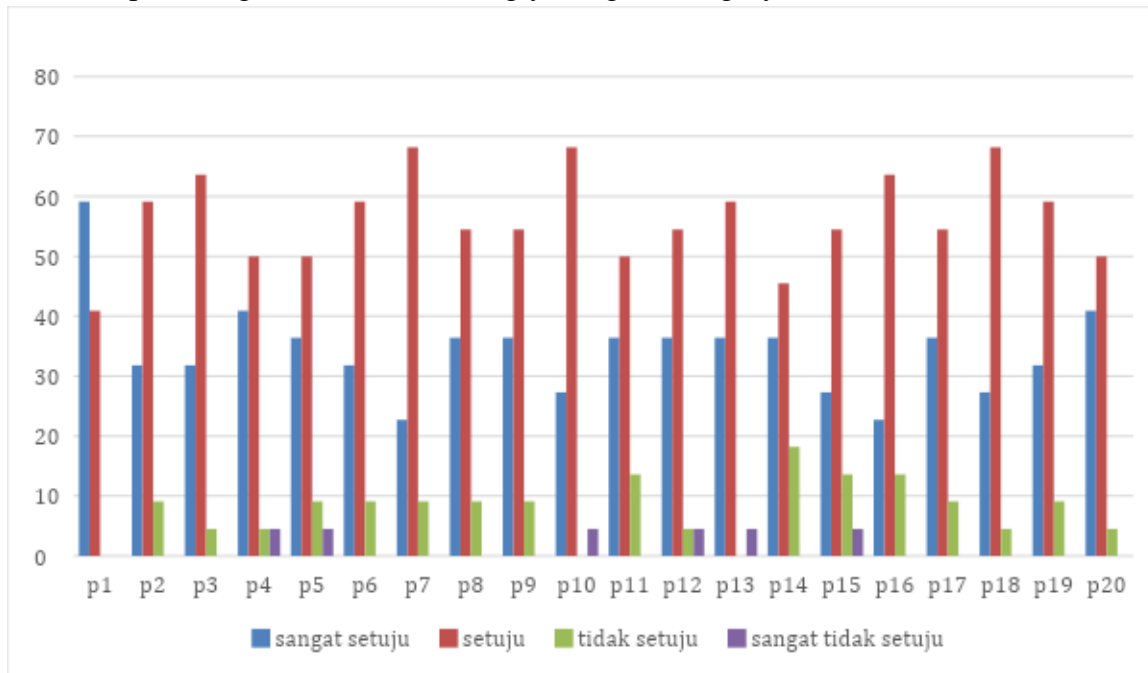

Figure.1 Graph of Respondents' Questionnaire Answers

The graph above shows that Chat GPT is useful in supporting learning in higher education. This research data uses 20 questions to find out student opinions on the usefulness of Chat GPT. The question that got the highest rank with the category strongly agreeing at a percentage of 59.1% in question 1. The next highest results were questions number 4 and 20 obtained a percentage of 40.9% in the category strongly agreeing. The next highest results are in questions number 5, 8, 9, 11, 12, 13, 14, and 17 obtained a percentage of 36.4% in the strongly agree category. The next highest results are in questions 2, 3, 6, and 19 obtained a percentage of 31.8% in the strongly agree category. The next highest results are in questions number 10, 15, and 18 obtained a percentage of 27.3% in the strongly agree category. The next highest results are questions number 10 and 16 obtained a percentage of 22.7% with a strongly agree category. The graph above also shows that question numbers 4,5,10,12,13,15, and 20 obtained a percentage of 4.5% with the category strongly disagree being the highest result. The next results of questions number 1, 2, 3, 6, 7, 8, 9, 11, 14, 16, 17, 18, and 19 obtained a percentage of 0% which can be categorized as strongly disagree. From the graph above, it can be obtained that the most results are in the strongly agree category and the least are in the strongly disagree category.

The next highest percentage is in questions number 3, 10, and 18 with a percentage of 68.2% in the agree category. Research data with the second highest category, namely in questions 3 and 16, obtained a percentage of 63.6% in the agreed category. The third highest result is in questions number 2, 6, 13, and 19 with a percentage of 59.1% in the agree category. The next highest result with a percentage of 54.5% in questions number 8, 9, 12, 15, and 17 obtained the agreed category.

The next highest result is question number 14, getting a percentage of 45.5% with the agreed category. The next highest result in question number 1 obtained a percentage of 40.9% in the agree category. The graph above shows that the percentage of 18.2% is the highest result in the disagree category in question number 14. The next highest result in question numbers 11, 15 and 16 obtained a percentage of 13.6% in the disagree category. The next highest results in questions number 2, 5, 6, 7, 8, 9, 17, and 19 obtained a percentage of 9.1% in the disagree category. The next highest results in question numbers 3, 4, 12, 18, and 20 obtained a percentage of 4.5% in the disagree category. The next results are in questions number 1, 10, and 13 with a percentage of 0% in the disagree category.

Based on the data obtained from filling out the questionnaire above, the use of Chat GPT in learning is one way that can be used to facilitate or assist students in completing final assignments, facilitate online discussions, assist students in understanding foreign languages, offer online academic assistance, and assist students in developing data analysis skills. and improve student learning outcomes. There are students who agree with the use of GPT Chat because of its ease of accessibility, quick response, flexibility, diversity of topics, and more personal interaction. However, there are some students who may disagree with the use of Chat GPT due to the lack of human-to-human interaction, limited capabilities of Chat GPT, inaccuracy of information, lack of hands-on experience, and technical issues. With its growing capabilities, ChatGPT is becoming one of the innovative solutions in addressing natural language issues in various fields.

The result of this study is that Chat GPT has benefits in supporting learning in higher education. Chat GPT can increase student understanding, motivate students to be more active in learning, but unfortunately Chat GPT also has a negative influence on students because with Chat GPT students and lecturers are less interacting in learning. Chat GPT is the most appropriate thing to use today because in this era, humans have depended on technology, such as in the world of education today, students can study at home online without having to meet face to face. The method used by researchers in this study is a quantitative method that uses a lot of numbers to get accurate and clear data. Data obtained by distributing questionnaires, interviews, documentation and going directly to the field to obtain accurate and clear data. By using this quantitative method, researchers can explain and detail the data obtained from distributing these questionnaires. This method can also facilitate researchers in making bar charts scientifically by using data from sources and conditions based on what is in the results of the research and distribution of the questionnaire.

The purpose of this research is to find out whether Chat GPT is useful or not in supporting learning in higher education. Maybe some students have applied this GPT Chat in the learning process and some other students have not used it in the learning process, because they do not understand or do not know what GPT Chat is and what it is used for. Usually those who use Chat GPT more are people who understand technology (OpenAI) and also students who are in the final semester. This GPT Chat has so many benefits if we use it as well as possible and can also have a bad impact if not used properly. It is hoped that students who have not used and applied Chat GPT in learning, so that they can use Chat GPT as soon as possible before regretting which will certainly be useful for facilitating learning. Therefore, researchers hope that future researchers can help students in applying Chat GPT properly.

CONCLUSION

ChatGPT is a computer program that uses Natural Language Processing (NLP) and machine learning technologies to generate automated replies in text form that are similar to human responses. ChatGPT is based on the GPT (Generative Pre-trained Transformer) architecture

developed by OpenAI. By taking input from users in the form of text, ChatGPT can generate complex and diverse responses by using natural language understanding and pre-learned knowledge from large text data. ChatGPT can be used in various applications, such as chatbots, personal assistants, or automated customer service systems. The use of Chat GPT can provide benefits in supporting learning in higher education, such as assisting students in obtaining the information needed quickly and effectively, increasing student participation in discussions, and increasing interaction between students and lecturers. However, the effectiveness of using Chat GPT in improving learning outcomes still needs to be considered with factors such as the quality of Chat GPT, compatibility with the learning methods used, and student characteristics. Therefore, universities need to conduct further research and conduct trials on the use of Chat GPT in learning by considering factors that affect its effectiveness. In addition, universities also need to provide training and development to lecturers and students to optimize the use of Chat GPT in supporting learning. That way, the use of Chat GPT can provide optimal benefits in supporting learning in higher education.

AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.
Author 3: Data curation; Investigation.
Author 4: Formal analysis; Methodology; Writing - original draft.
Author 5: Supervision; Validation.

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