The Analysis of Chat GPT Usage Impact on Learning Motivation among Scout Students

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ABSTRACT

Chat GPT is an AI tool that provides users a chat-based answer that comes from their questions. This powerful technology brings numerous benefits to many sectors, including education. The use of AI for students may occur to become their assistants for their learning purposes. This paper explained about the impact of Chat GPT usage among students on their learning motivation. The study collected total of 500 respondents that come from students in Medan, Indonesia which join in a scout community. The study used a quantitative approach, a survey and questionnaire distribution are performed to collect data from the respondents. We adopted previous research instruments to describe the variables used with some modifications. There are 10 items for present the independent variable and 10 items that used for the dependent variable. A linear regression is used to test the hypothesis, while multicollinearity, heteroscedasticity, and normality are performed as the classical assumption test. The descriptive statistic method such mean score is employed to presents the level of Chat GPT usage among students. The result shows that male students are dominant than female regarding the usage level. Surprisingly, the younger students have high level of Chat GPT usage rather than the older students. The study also pointed out that the Chat GPT usage has a positive significant impact on the students' learning motivation.

Keywords: Chat GPT, Learning Motivation, Student, Artificial Intelligence, Education

INTRODUCTION

In recent years, Artificial Intelligence (AI) has made significant progress and it is now used across a wide range of various industries and applications (Nasim et al., 2022). Moreover, AI is altering the way people live and work that expecting AI to evolve and play a more significant part in society as research and technology advancements continue (Lockey et al., 2021). AI also has been utilizing in education sector. It has the ability to transform education through improving teaching and learning experiences, customizing education, streamlining administrative duties, and opening up new avenues for research (Zhai et al., 2021). AI technology can be used in a variety of ways in the education, including intelligent tutoring systems, adaptive learning platforms, automated grading systems, virtual reality simulations, and data analytics (Holmes & Tuomi, 2022).

In term of intelligent tutoring systems, An AI program like Chat GPT is a tool that can assist students in producing writing assignments, providing feedback and revision guidelines, and providing writing assistance. Consequently, it can be used to help them develop their skills. (Abdullayeva & Musayeva, 2023) and enhance the learning process (Ausat et al., 2023). However, the usage of Chat GPT among students become contradiction (Anders, 2023). Some parties agrees that this technology is able to improve students'

learning process. Conversely, some of them put on as the opposite that resistance of the use of Chat GPT (Crawford et al., 2023). The pro parties claimed that chatbot such Chat GPT can improve productivity, communication, learning, and teaching support. A new educational platform can address the most difficult educational problems by utilizing this technology as an engagement tool (Sandu & Gide, 2019). In contrast, the other parties stated that students might have a potential for over-reliance on Chat GPT. Instead of honing their critical thinking and problem-solving skills, they become dependent on the model for answers and solutions. Their inability to think freely and creatively, which are essential for both academic success and personal growth, may be hampered by this over-reliance (Fuchs, 2023).

There are several studies stated that the usage of AI is positively influencing students' motivation to learn. Huang et al. (2023) argued that the AI-enabled personalized video recommendations have a significant impact on students' learning performance and engagement of students with a moderate motivation level. In line with this, a study from Ali et al. (2023) pointed out that the use of Chat GPT for learning is able to enhance the students' learning motivation. Similarly, Lee et al. (2022) reported that the usage of AI-based chatbots may increase the students' motivation to learning. In the same way, Chiu et al. (2023) also stated that AI-based tool usage for learning purposes may improve students' motivation. In summary, AI is a great tool for students to improve their learning motivation. In this study, we discovered the impact of Chat GPT usage on students' learning motivation by employing statistical method such regression analysis. Tables and figures also presented to describe the research outcomes.

MATERIALS & METHODS
Hypothesis Development
The use of Chat GPT by students may brings some advantages, especially for their learning motivation as concluded in previous section. The research's conceptual framework is illustrated in Figure 1. The study proposed a hypothesis to be tested by employing regression analysis, namely:

H_0: The use of Chat GPT has no impact on students' learning motivation.

H_1: The use of Chat GPT has a positive impact on students' learning motivation.

Figure 1. Research Framework

This study only used two variables, namely the independent and dependent variable. Based of Figure 1, the use of Chat GPT acts as the independent variable, while students' learning motivation acts as the dependent variable. Therefore, a regression analysis is suitable to fulfil the hypothesis investigation.

Population and sample
The population of the study is entire scout students from Medan, Indonesia. However, we selected 500 students as the sample.

They are come from various high school and join in a scout community. The respondents' demographic is shown in Table 1.

Table 1. Respondents' Demographic

Demographic Features		Frequency	Percentage (%)
Gender	Male	286	57.2
	Female	214	42.8
Age (Years old)	16	76	15.2
	17	168	33.6
	18	256	51.2
School Grade	X	80	16
	XI	162	32.4
	XII	258	51.6

Research Instrument

The study is a quantitative approach, which means use the numerical data and statistical method as the analysis (Lubis et al., 2021). Hence, the questionnaire is used for the data collection method. The study adopted previous studies' instruments with some modifications to illustrate the variables. The independent variable instruments is adopted from Shoufan (2023) with total of 10 items. while a total of the dependent variable instruments is adopted from Lubis (2017). Then, the respondents can give the respond for the questions with 5 level Likert scale, including "Strongly Disagree", "Disagree", "Neutral", "Agree", and "Strongly Agree". Table 2 shows the list of items in the questionnaire.

Table 2. Research Instruments

Variable	Item Code	Questions
The use of Chat GPT (USE)	USE1	Do you agree that Chat GPT has powerful capabilities?
	USE2	Do you agree that Chat GPT is an effective tool for learning?
	USE3	Do you agree that Chat GPT is a complementary for learning resource?
	USE4	Do you agree that Chat GPT helps to study more efficiently?
	USE5	Do you agree that Chat GPT is easy to use?
	USE6	Do you agree that Chat GPT presents an impressive explanation?
	USE7	Do you agree that Chat GPT provides well-structured answers?
	USE8	Do you agree that Chat GPT usually answers the question correctly?
	USE9	Do you agree that Chat GPT is better than any other tools, such Google?
	USE10	Do you feel optimistic about Chat GPT?
Students' learning motivation (MOT)	MOV1	Are you motivated to learn new things?
	MOV2	Do you have a strong desire to succeed academically?
	MOV3	Do you find joy and satisfaction in the process of learning?
	MOV4	Do you believe that learning is important for your future?
	MOV5	Are you eager to explore and expand your knowledge?
	MOV6	Do you set challenging goals for yourself in my academic pursuits?
	MOV7	Are you willing to put in the effort required to achieve academic success?
	MOV8	Are you curious and actively seek out new information and experiences?
	MOV9	Do you believe that learning helps you develop new skills and abilities?
	MOV10	Do you enjoy participating in class discussions and activities?

Instrument Test

The study evaluates the instrument in terms of validity, reliability, and classical assumptions test before employing regression as a data analysis tool. The measuring instrument's validity was examined utilizing the Pearson correlation on the value of each item with the mean value of the items in each variable. On the other hand, the Cronbach Alpha (α) score is employed to analyse the reliability of each instrument. Furthermore, multicollinearity, heteroscedasticity, and normality test are used as the classical assumptions test. The results of instrument test are shown in Table 3, Table 4, and Table 5.

Table 3. The Validity Test Result

Item Code	MeanUSE	MeanMOV
USE1	0.860**	
USE2	0.787**	
USE8	0.748**	
USE4	0.826**	
USE5	0.789**	
USE6	0.884**	
USE7	0.875**	
USE8	0.759**	
USE9	0.855**	
USE10	0.869**	
MOV1		0.832**
MOV2		0.752**
MOV8		0.825**
MOV4		0.793**
MOV5		0.878**
MOV6		0.773**
MOV7		0.837**
MOV8		0.843**
MOV9		0.836**
MOV10		0.873**

The validity test is conducted by using the correlation coefficients to measure how strong a relationship is between two variables (Mishra & Alok, 2022). Hence, the study used the correlation to reveals the relationship between each item of the instrument with the mean score as the method of the validity test. According to Table 3, each variable has a high correlation value towards the mean score and has a significant positive value (**). Hence, it can be concluded that this study has a proper validity. Furthermore, the instrument reliability was tested using Cronbach Alpha (α). The score should greater than 0.7 ensure that the instrument has a good reliability (Black & Babin, 2019). The results of reliability test are depicted in Table 4.

Table 4. The Reliability Test Result

Variable	Total Item	Cronbach Alpha (α)
USE	10	0.82
MOV	10	0.86

Table 4 shows that both variables have good alpha (α) values, which are 0.82 for the independent variable and 0.86 for the dependent variable. Thus, the instrument has a good reliability. Moreover, the normality test was employed the Kolmogorov-Smirnov test, while multicollinearity test is performed by determining the Tolerance value and Variance Inflation Factor (VIF) to detecting a multicollinearity problem in the model. The result of multicollinearity and normality are listed in Table 5. On the other hand, the study also employed the scatter plot method to test the heteroscedasticity of the model. The result is depicted in Figure 2.

Table 5. The Multicollinearity and Normality Test Result

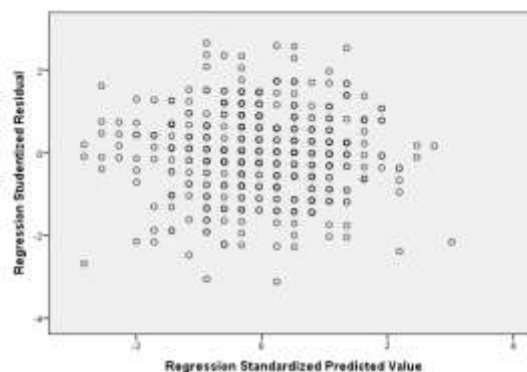| Variable	Collinearity		Kolmogorov-Smirnov Score
	Tolerance	VIF	
USE	0.672	7.128	0.015
MOV	0.491	6.993	

Figure 2. Scatter Plot

Tolerance value for each variable should greater than 0.10 to prove the model passed the multicollinearity test in the regression model, along with the VIF value should below than 10 (Lubis et al., 2021). As shown in Table 5, the Tolerance value are greater than the cut off value for both variables. The VIF value of each variable is less than 10. Hence, it can be concluded that the model passes the multicollinearity problems. Moreover, Table 5 also shows that the Kolmogorov-Smirnov score is 0.015, which means it was below 0.05 and indicates that the model also passes the normality test. On the other hand, Figure 2 portrays that there is no certain pattern on the graph and the dots are spreading and widening. Therefore, the model also passes the heteroscedasticity test.

RESULT
The Level of Chat GPT Usage
The study also investigated respondents' use of Chat GPT. The mean scores of the USE variable from each demographic were checked to assess the utilization level. This analysis is used to evaluate the level of Chat GPT usage by referring to their gender, age, and grade level. Table 6 summarizes the Chat GPT utilization level.

Table 6. Chat GPT Usage Level by Demographic

Variable	Category	Mean Score
Gender	Male	3.849
	Female	3.081
Age	16	3.938
	17	3.703
	18	3.484
School Grade	X	3.519
	XI	3.478
	XII	3.328

According to Table 6, male respondents have a greater of mean score than female (3.849 > 3.081). In term of age, younger respondents (16 years old) have the highest mean score (3.938), while students aged 17 years old have the mean score of 3.703. Surprisingly, the oldest students among respondents have only 3.484 of the mean score. Moreover, the 10th grade students have the highest mean score, followed by the 11th grade and 12th grade with the mean score as 3.478 and 3.328.

Regression Analysis

The regression analysis is used to verify the proposed hypothesis (H_1). We used two items in a linear regression interpretation. The first one is the R value to presents variation in the dependent variable is caused by the independent variable whereas the R^2 value to illustrates the variation percentage of the dependent variable explained by the independent variable. Table 7 shows the R value of the regression analysis.

Table 7. The R Value

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.757[a]	.573	.589	.65080

Based on the Table 7, the R^2 is at 0.573. Thus, it indicates that students' learning motivation is influenced by the usage Chat GPT in about 57.3%. The other factors come from the other variables out of this research. The second one is beta (β), it computes the strength of the independent variable's influence on the dependent variable. The higher the absolute value of the beta value, the more specific the independent factor plays a role in explaining the dependent variable (Lubis et al., 2021). Furthermore, the study used the significance value (p) to check the hypothesis whether accepted or not with the consideration test result value must be below the value of 0.05 (α). Table 8 shows the results of the coefficients.

Table 8. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.521	.153		24.020	.000
	mean	-.056	.044	-.057	-1.273	.023

As shown in Table 8, the usage of Chat GPT is positively affecting students' learning motivation with the level of significance (β = 0.521 and p = 0.023 <0.05). Thus, Hypothesis 1 (H_1) is accepted and H_0 is rejected. Students who use Chat GPT can increase their motivation to learning.

DISCUSSION
Students' Usage Level of Chat GPT
Based on the Table 6, the survey stated that male students are more intense to use Chat GPT for learning purposes rather than female. In term of age, younger students are dominant to implement this AI technology compared to the older students. In line with this, the lower grade students show a high level of Chat GPT rather than their senior as referred to the survey result. Hence, it can be concluded that younger students will have chance to use AI technology such Chat GPT for their learning activities.

The Relationship between the Use of Chat GPT and Students' Learning Motivation
As shown in Table 7, the use of Chat GPT explained the students' learning motivation about 57.3%. The number presents a moderate value of how was the independent variable impacting the dependent variable. In summary, the utilization of Chat GPT for learning purposes may brings a small effect on the learning motivation. The other factors may come from teacher influence, supportive learning environment and others (Esra & Sevilen, 2021). Moreover, Table 8 shows that the use of Chat GPT has a

positive impact on students' learning motivation, and yet H_1 is accepted.

CONCLUSION

Artificial Intelligence (AI) has made significant progress in recent years and is being used in various industries and applications. In the education sector, AI has the potential to transform education by improving teaching and learning experiences, customizing education, streamlining administrative duties, and opening up new research avenues. AI technology, such as intelligent tutoring systems like Chat GPT, can assist students in writing assignments, providing feedback and revision guidelines, and enhancing their learning process. This paper discusses the impact of using Chat GPT, an AI tool, on students' learning motivation. The results showed that Chat GPT had a significant positive impact on students' learning motivation, with a moderating effect of about 57.3%. The study found that male students had a higher usage level of Chat GPT compared to female students, and younger students had a higher usage level than older students. The study also revealed that the usage of Chat GPT had a positive significant impact on students' learning motivation. In conclusion, the study suggests that the usage of Chat GPT can increase students' motivation to learn. However, other factors such as teacher influence and the learning environment also play a role in students' motivation. These findings highlight the potential benefits of AI tools like Chat GPT in improving students' learning experiences and motivating them to learn.

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