RESEARCH ARTICLE

The Dilemma of Students in the Age of AI: Analysis of the Effects of ChatGPT Use and Academic Procrastination

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ABSTRACT

The development of artificial intelligence (AI) has changed the way students interact with academic processes, especially through the use of Generative AI such as ChatGPT. This study aims to analyze the relationship between the intensity of ChatGPT use and the level of academic procrastination among students. The study used a descriptive quantitative approach with accidental sampling of 100 students at Muhammadiyah University Surabaya. The research instruments were the ChatGPT Usage Scale, adapted from the academic technology usage intensity scale, and the Procrastination Assessment Scale for Students (PASS) version by Jannati (2020). The analysis results show a significant positive relationship between ChatGPT usage and academic procrastination ($r = 0.646$; $p < 0.001$), with an effective contribution of 41.7% ($R^2 = 0.417$). This indicates that the higher the intensity of ChatGPT usage, the higher the tendency to delay academic tasks.

Keywords: ChatGPT, academic procrastination, self-regulation, digital literacy, artificial intelligence.

ABSTRAK

Perkembangan kecerdasan buatan (Artificial Intelligence/AI) telah mengubah cara mahasiswa berinteraksi dengan proses akademik, terutama melalui penggunaan Generative AI seperti ChatGPT. Penelitian ini bertujuan untuk menganalisis hubungan antara intensitas penggunaan ChatGPT dan tingkat prokrastinasi akademik pada mahasiswa. Penelitian menggunakan pendekatan kuantitatif deskriptif dengan teknik aksidental sampling terhadap 100 mahasiswa Universitas Muhammadiyah Surabaya. Instrumen penelitian berupa Skala Penggunaan ChatGPT yang diadaptasi dari skala intensitas penggunaan teknologi akademik, serta Procrastination Assessment Scale for Students (PASS) versi Jannati (2020). Hasil analisis menunjukkan adanya hubungan positif yang signifikan antara penggunaan ChatGPT dan prokrastinasi akademik ($r = 0,646$; $p < 0,001$), dengan kontribusi efektif sebesar 41,7% ($R^2 = 0,417$). Hal ini mengindikasikan bahwa semakin tinggi intensitas penggunaan ChatGPT, semakin tinggi pula kecenderungan menunda tugas akademik.

***Kata kunci:** ChatGPT, prokrastinasi akademik, regulasi diri, literasi digital, kecerdasan buatan.*

INTRODUCTION

The development of artificial intelligence (AI) technology has brought about major transformations in the world of education, especially in higher education. One of the most prominent forms of AI in recent years is Generative AI, such as ChatGPT developed by OpenAI. ChatGPT has the ability to understand natural language context and generate text automatically, making it widely used by students to help compose scientific papers, summarize readings, or find academic references. A survey conducted by BestColleges (2023) shows that 43% of students in the United States have used ChatGPT in their academic activities, and 22% of them use it to complete assignments directly. This indicates that AI has become an integral part of the learning process and academic productivity of students.

However, behind these benefits, there are concerns about the psychological and academic behavioral impacts of students becoming increasingly dependent on technology. One behavior that is

often associated with the use of AI is academic procrastination, which is the tendency to delay academic work despite being aware of the negative consequences (Ferrari, Johnson, & McCown, 1995). Data from the Ministry of Education and Culture (2023) reveals that only 34% of Indonesian students are able to complete their studies on time, and one of the main causes is the habit of procrastinating. In the digital context, ChatGPT, which offers convenience, can actually reinforce procrastination because it provides a false sense of security that tasks can be completed quickly at the last minute (Widjaya, Rahmah, & Utami, 2024).

Previous research supports these findings. Niyu, Wirakusumah, and Erlandia (2023) found that 70.2% of Indonesian students use ChatGPT for academic assignments, but only a small proportion understand the ethical risks and behavioral impacts it entails. Meanwhile, Mairiska and Qadariah (2023) explain that the use of ChatGPT has two sides: it can increase learning efficiency for students with high self-control, but it can also worsen procrastination for those with low motivation. Research by Alfian and Prasetyo (2021) also confirms that low levels of self-regulated learning are positively correlated with high levels of academic procrastination among students.

Based on this description, there is an important research gap that needs to be explored further, namely the extent to which the use of ChatGPT can affect students' academic procrastination levels and what psychological factors play a role in this. Therefore, this study is compiled in the form of a literature review to systematically review the results of previous studies on the relationship between the use of ChatGPT and academic procrastination. This study is expected to provide a theoretical understanding of the psychological impact of AI use in education, as well as a basis for the development of digital literacy policies and strategies to strengthen student self-regulation in the era of artificial intelligence.

Theoretical Review

Use of ChatGBT

Chat GPT, short for "Generative Pre-trained Transformer." Chat GPT is an artificial intelligence model that uses transformer architecture to generate natural language text. Chat GPT applies machine learning techniques that enable a system to understand and generate natural language text. According to OpenAI research, ChatGPT is powered by the GPT-4 model, which has hundreds of billions of parameters, making it one of the most advanced language models for accurately processing and generating natural language. The main advantage of ChatGPT is its ability to understand the context of a conversation and generate natural responses. This makes it useful for a variety of purposes, from education and customer service to preliminary data analysis.

In the context of education, ChatGPT is used as a tool to understand lecture material, compose papers, and generate research ideas (Mairiska & Qadariah, 2023). The existence of ChatGPT has brought significant changes to the way students manage their study time and complete assignments. According to Widjaya, Rahmah, and Utami (2024), students who use ChatGPT tend to have a high perception of efficiency because they can complete work faster than conventional methods. A survey conducted by Stanford (2023) found that more than 60% of students who use AI such as ChatGPT feel helped in understanding difficult academic material, especially in science and data.

This phenomenon can be explained through the Technology Acceptance Model (TAM) proposed by Davis (1989), which states that perceptions of perceived ease of use and perceived usefulness of technology will determine user behavior towards that technology. The TAM theory was developed based on the Theory of Reasoned Action (TRA), which states that behavioral intention is shaped by two main components: attitude toward the behavior and subjective norm (Fishbein & Ajzen, 1975).

When students consider ChatGPT easy to use and useful, they are more likely to use it without considering the long-term impact on critical thinking and self-regulation skills. In addition, the instant gratification theory proposed by Steel (2007) states that individuals tend to choose activities that provide immediate satisfaction over activities that require cognitive effort, so that the use of ChatGPT can act as a temporary avoidance mechanism for academic stress.

However, behind this efficiency lies a change in learning patterns that has the potential to reduce academic independence and responsibility. Students who are overly dependent on ChatGPT tend to reduce their cognitive effort in understanding the material (Niyu, Wirakusumah, & Erlandia, 2023). This phenomenon is related to the concept of cognitive offloading, which is the tendency of individuals to delegate their thinking burden to external tools (Risko & Gilbert, 2016). If done excessively, this can reduce students' capacity for reflection and critical thinking skills.

Academic Procrastination

Academic procrastination is the behavior of deliberately delaying academic work or responsibilities despite knowing the negative consequences (Ferrari, Johnson, & McCown, 1995). Steel (2007) explains that procrastination is a form of self-control failure that arises when individuals choose more enjoyable activities over challenging tasks. In the context of higher education, procrastination is closely related to stress, anxiety, and a decline in academic achievement (Alfian & Prasetyo, 2021).

Based on Temporal Motivation Theory (TMT), procrastination occurs when a person has low motivation to do a task (Siaputra, 2010). Another approach was taken by behaviorist theorists, who focused more on behavior to avoid unpleasant stimuli (Solomon & Rothblum, 1984). Escape conditioning occurs when individuals start working on a task and then stop (Honig, cited in Ferrari, Johnson, & McCown, 1995). This fosters an attitude of stopping before the work is completely finished (task completion failure). Avoidance conditioning occurs when individuals make extraordinary efforts to avoid a task. This causes individuals to delay their efforts to start working on the task. Ainslie's (1975) pseudo-reward theory states that humans tend to choose short-term reinforcement or rewards over long-term goals, where short-term reinforcement brings immediate pleasure.

METHOD

This study uses a descriptive quantitative method to critically review the relationship between ChatGPT use and academic procrastination. The research subjects were 100 students from Muhammadiyah University Surabaya, with accidental sampling as the sampling technique.

Research instruments:

The research instrument consists of an online questionnaire divided into two parts:

1. ChatGPT Usage Scale, adapted from the academic technology usage intensity scale.
2. Academic Procrastination Scale, using the Procrastination Assessment Scale for Students (PASS) that has been used by Jannati (2020) with a 4-point Likert scale.

RESULTS

Descriptive Analysis Results

Table 1. Descriptive Statistics of Research Variables

	Procrastination (Y)	*ChatGBT* (X)
Descriptive Statistics		
Valid	100	100
Missing	0	0
Mean	39,140	14.590
Standard Deviation	9.334	3.516
Minimum	16,000	6,000
Maximum	63,000	24,000

Based on the results of descriptive analysis, the procrastination variable (Y) has a valid data set of 100 respondents with no missing data (missing = 0). The mean value is 39.14 with a standard deviation (SD) of 9.33, indicating moderate variation in procrastination levels among respondents. The minimum value of 16.00 and the maximum of 63.00 indicate a fairly wide range of scores, suggesting significant individual differences in procrastination behavior.

Based on the descriptive analysis results, the ChatGBT variable (X) had a valid data set of 100 respondents with no missing data (missing = 0). The mean value was 14.590 with a standard

deviation (SD) of 3.51, indicating moderate variation in procrastination levels among respondents. The minimum value of 6.00 and maximum of 24.00 indicate a fairly wide score range, suggesting significant individual differences in procrastination behavior.

Table 2. Simple Linear Regression Model Summary

Model Summary - X

Model	R	R^2	Adjusted R^2	RMSE
H_1	0.646	0.417	0.411	2.698

Table 3. ANOVA Results of the Simple Linear Regression Test

ANOVA

Model		Sum of Squares	df	Mean Square	F	p
H_1	Regression	510.629	1	510.629	70.130	< .001
	Residual	713,561	98	7,281		
	Total	1,224,190	99			

Note. The intercept model is omitted, as no meaningful information can be shown.

The results of the simple linear regression test show a correlation value of rxy = 0.646, F = 70.130 with p < 0.001. This indicates that the alternative hypothesis (H_1) is accepted, namely that the use of ChatGPT is significantly correlated with procrastination. In addition, the analysis also yielded an R^2 value of 0.417, indicating that 41.7% of the variance in procrastination can be explained by variable X (the use of ChatGPT). The remaining 58.3% is influenced by other factors outside the research model, such as self-regulation, intrinsic motivation, time management, or academic pressure.

The strength of the relationship with r = 0.646 falls into the strong correlation category according to Cohen's (1988) guidelines, which classify correlation values of r = 0.10–0.29 as weak, r = 0.30–0.49 as moderate, and r ≥ 0.50 as strong. Based on these guidelines, a correlation value of 0.646 indicates that the relationship between ChatGPT usage and procrastination is strong. This suggests that the higher the intensity of ChatGPT usage, the greater the tendency for procrastination among students.

DISCUSSION

The results of the study show a positive relationship between ChatGPT usage and procrastination in the research sample. This can be explained based on the Technology Acceptance Model (Davis, 1989), which states that if technology is perceived as very easy and useful, users are more likely to rely on it. In an academic context, the perception of ease (e.g., "tasks can be completed quickly with ChatGPT") creates a kind of false security or false competence, reducing the urgency to start tasks early and thus facilitating procrastination.

The concept of cognitive offloading describes the tendency to transfer cognitive load to external tools (Risko & Gilbert, 2016). Relying on ChatGPT to summarize, design arguments, or draft can reduce initial cognitive effort and deep learning processes, making students more prone to procrastinate on tasks that require intensive thinking.

The theory of procrastination as a failure of self-control (Steel, 2007) explains that activities that provide quick rewards (entertainment, ease of completing tasks at the last minute) will be chosen. ChatGPT provides a "quick fix" option that reinforces the tendency toward instant gratification and discourages healthy time management practices. (Added Ainslie's pseudo-reward theory)

Additionally, from a behaviorist perspective (Skinner, 1953), the positive relationship between ChatGPT usage and procrastination can also be explained through the mechanism of reinforcement. In this context, students who use ChatGPT to complete tasks quickly receive positive reinforcement in the form of convenience, satisfaction, and reduced cognitive load. This condition indirectly reinforces procrastination behavior, as individuals learn that even though they procrastinate, tasks can still be completed with the help of technology without significant negative consequences.

Procrastination behavior then becomes increasingly established through operant conditioning, where the stimulus of easy access to information from ChatGPT elicits a delayed response that receives instant rewards. Thus,

procrastination behavior can continue to repeat and strengthen as dependence on technology increases.

Overall, these findings indicate that the use of ChatGPT is not only related to perceptions of technological ease and usefulness as described in the Technology Acceptance Model (Davis, 1989) and cognitive offloading (Risko & Gilbert, 2016), but also reinforces procrastinatory behavior through positive reinforcement mechanisms as described in behaviorist theory (Skinner, 1953).

Positive Impact (when used wisely):

a. Reduces cognitive load in repetitive tasks (summarizing literature, developing initial structures).
b. Accelerates the idea exploration phase, which can increase productivity when integrated into a structured work process.
c. Helps students with limited time to access summaries or initial references so they can allocate time for deeper analysis.

Negative Impact (risks):

a. Encourages procrastination by providing a false sense of security that tasks can be completed quickly later.
b. Reduces cognitive effort (decreased deep learning).
c. Potential academic integrity issues (plagiarism or lack of originality), which may weaken long- term motivation to excel.

Research Limitations

This study also did not involve moderator or mediator variables such as self-regulation, intrinsic motivation, or academic pressure that could explain the psychological mechanisms behind the relationship between ChatGPT and procrastination. In fact, previous literature shows that these factors have an important influence on technology-based learning behavior.

Second, the sample was collected using accidental sampling among students at Muhammadiyah University Surabaya, so generalizing the results to the entire Indonesian student population requires caution. Institutional conditions, academic culture, and digital literacy levels may vary between universities and influence ChatGPT usage patterns.

CONCLUSION

Based on the findings from various studies, it can be concluded that the use of ChatGPT has a significant positive relationship with students' academic procrastination levels. In addition, the analysis also shows that 41.7% of the variance in procrastination can be explained by variable X (ChatGPT usage). However, it is recognized that ChatGPT has a dual role in that it can either accelerate learning or exacerbate procrastination, depending on the level of self-regulation, academic integrity, and intrinsic motivation of students.

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