

## THE INFLUENCE OF SELF-REGULATED LEARNING AND DIGITAL LITERACY ON ACADEMIC PROCRASTINATION IN VOCATIONAL STUDENTS

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### ABSTRACT

This research is primarily focused on analyzing the impact of SRL and digital literacy on academic procrastination among vocational high school students majoring in Office Management and Business Services at SMKN 41 Jakarta. A quantitative approach was used with 106 students as a saturated sample. A survey instrument was employed to obtain the data and analyzed using IBM SPSS, encompassing assessments of instrument validity and reliability, as well as classical assumption checks and hypothesis evaluation via multiple linear regression. The results show that: (1) SRL has a significant negative effect on academic procrastination, (2) digital literacy also has a significant negative effect, and (3) both variables together significantly and negatively affect academic procrastination. This research contributes to educational strategies by highlighting the importance of enhancing self-regulated learning and digital literacy to reduce academic procrastination among vocational high school students.

**Keywords: Self-regulated learning, Digital literacy, Academic procrastination**

### ABSTRAK

Studi ini dirancang untuk menguji pengaruh SRL dan literasi digital terhadap Academic Procrastination pada siswa SMKN 41 Jakarta jurusan Manajemen Perkantoran dan Layanan Bisnis. Penelitian ini menggunakan pendekatan kuantitatif dengan 106 siswa sebagai sampel jenuh. Data dikumpulkan melalui survei dan dianalisis menggunakan IBM SPSS, mencakup uji validitas, reliabilitas, asumsi klasik, serta uji hipotesis melalui regresi linier berganda. Hasil studi menunjukkan bahwa: (1) self-regulated learning berpengaruh negatif dan signifikan terhadap Academic Procrastination, (2) literasi digital juga berpengaruh negatif dan signifikan, dan (3) kedua variabel tersebut secara simultan berpengaruh negatif dan signifikan terhadap Academic Procrastination. Penelitian ini berkontribusi pada strategi pendidikan dengan menekankan pentingnya peningkatan self-regulated learning dan literasi digital untuk mengurangi Academic Procrastination pada siswa sekolah menengah kejuruan.

**Kata kunci: Pembelajaran mandiri, Literasi digital, Academic procrastination**

### INTRODUCTION

Academic procrastination is a behavioral issue frequently found among students at both senior high school and vocational high school levels. It characterizes a recurring pattern of delaying scholastic duties despite being aware that knowing the possible negative impact on academic performance. This phenomenon is often caused by poor time and task management, lack of motivation, and difficulties in adapting to structured learning demands. Among

vocational students, particularly those in Office Management and Business Services (MPLB) programs, these challenges are amplified due to the nature of their studies, which require strong administrative skills, digital competency, and independent task completion.

Students in vocational programs are expected to be disciplined and practically prepared for the workforce. However, they often face barriers such as heavy administrative workloads, project-based tasks, and digital tool integration—all of which can contribute to procrastination. These challenges make it important to study procrastination within the unique learning environment and demands of vocational education.

Several recent studies have confirmed the widespread presence of academic procrastination. For instance, Ramadhani et al. (2023) found that procrastination was a contributing factor to poor academic achievement among high school students in Jakarta. Similarly, Putra and Affandi (2023) reported in his research that vocational students moderate levels of procrastination, with some students with the high category. Basilisa and Pedhu (2021) found that a majority of their vocational school participants displayed moderate procrastination, often caused by engaging in more enjoyable but less important activities, a lack of clear goals, and poor time awareness. Meanwhile, Widyaningsih and Savira (2021) revealed that procrastination negatively affected task quality and increased student stress levels due to tight deadlines. Despite the growing body of research, most existing studies focus on university or general high school students. Moreover, many of them examine individual factors such as self-regulated learning or digital literacy separately, without exploring the combined effects of both variables. This creates a gap in the literature, particularly in the context of vocational education in urban settings such as Jakarta.

Preliminary data collected at SMKN 41 Jakarta shows that low self-regulated learning (13.3%) and digital literacy (10%) are among the dominant factors contributing to students' academic procrastination. Other factors such as self-efficacy, motivation, and social support showed higher scores, indicating their relatively minor influence in this particular context. The novelty of this study lies in examining both self-regulated learning and digital literacy simultaneously within a vocational education context—an area that remains underexplored, especially in urban settings like Jakarta. Therefore, the primary aim of this research is to analyze the influence of self-regulated learning and digital literacy, both individually and jointly, on academic procrastination among MPLB students at SMKN 41 Jakarta. This study aims to support the development of more effective teaching strategies that enhance discipline, improve academic outcomes, and reduce procrastination in vocational schools.

## LITERATURE REVIEW

### Self-Regulated Learning

SRL refers to an independent and proactive approach in which students take control of their own learning by managing their environment and strategies to achieve meaningful academic objectives (Shitarukmi et al., 2023). SRL refers to learning that occurs mostly from the thoughts, feelings, strategies, and behaviors produced by the learner themselves which are aimed at achieving goals (Khoerunnisa et al., 2021). SRL is the ability of students to regulate themselves in the learning process or is also called student learning independence (Leana et al., 2024). Based on these perspectives, SRL serves as a foundational element for academic success, as it fosters independence, goal orientation, and effective time and task management. Students with strong self-regulation skills are more likely to stay motivated, focused, and consistent in completing academic responsibilities.

### Digital Literacy

Digital literacy is not just the competence in utilizing use digital devices, smartphones, or the internet. Digital literacy further encompasses the capacity to locate, select, and evaluate

information appropriately (Cahyani et al., 2024). To be digitally literate is to be equipped with the essential competencies required to navigate and thrive within a world progressively shaped and driven by emerging technological frameworks. (Campanozzi et al., 2023). Digital literacy can be conceptualized as a fundamental pillar of progress in today's society. It includes strategy related to search, obtaine, process, and communicate information (Gutiérrez-Ángel et al., 2022). Based on these perspectives, digital literacy is a fundamental competency in the modern era. It enables individuals—especially students—to think critically, use technology responsibly, and participate effectively in digital environments for academic and everyday purposes.

**Academic Procrastination**

Procrastination can be viewed as a societal behavior pattern characterized by the habitual deferral of duties and obligations. often leading to detrimental consequences for those who engage in it (Svartdal & Løkke, 2022). Procrastination is closely associated with diminished motivation and poor self-regulation in students, which often leads to adverse effects on their academic achievement. (Ertem & Arı, 2022). Procrastination can be said to be an individual's habit in response to carrying out tasks (Sanggasurya & Mahamit, 2021). Based on these perspectives, academic procrastination reflects a consistent pattern of delay that hinders student achievement. It is shaped by intrinsic elements including motivation and self-regulation, making it a critical issue to address in the learning process.

Based on Figure 1, this research examines 3 main hypotheses concerning the elements influencing academic procrastination among students of VHS 41 Jakarta majoring in MPLB. The first hypothesis (H1) states that SRL has an influence on academic procrastination. The second hypothesis (H2) suggests that digital literacy also affects academic procrastination. The third hypothesis (H3) proposes that both SRL and digital literacy simultaneously influence students' academic procrastination.

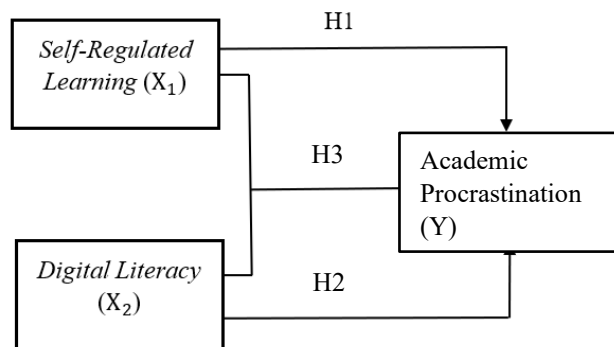


Figure 1. Hypothesis Development

**METHOD**

This study applied a quantitative research method. Data were analyzed using descriptive statistics such as the mean, median, and standard deviation to identify central tendencies and variability. The research instruments were tested for validity and reliability, with Cronbach’s alpha coefficients exceeding the acceptable threshold of 0.7 for each construct, ensuring accurate and consistent measurement throughout the study. To determine the impact of SRL and digital literacy on academic procrastination, the study employed multiple linear regression. Prior to executing the regression analysis, classical assumption tests were administered to confirm that the dataset fulfilled the essential statistical prerequisites—specifically multicollinearity tests to rule out high interdependence between predictors, and heteroscedasticity checks to confirm uniformity in residual variance. Hypotheses were tested

using both t-tests and F-tests to assess individual and combined effects, while the R-squared statistic measured the range to which the model accounted for variance in the outcome variable.

The study adopted a sampling strategy involving saturated sampling. As stated by Sugiyono (2020), this method involves selecting the entire population as the sample, particularly when the total number of population members is relatively limited. This approach was chosen to ensure that all individuals in the population were included in the research.

Table 1. Summary of Respondent Profile

Class	Frequency	Percentage
X MPLB	35	33%
XI MPLB	36	34%
XII MPLB	35	33%
<b>Total</b>	<b>106</b>	<b>100%</b>

Referring to the aforementioned Table 1, the respondents in this study came from three grade levels within the MPLB major. The highest number of respondents came from Grade XI MPLB, totaling 36 students or approximately 34% of the overall sample. This was followed by 35 students (33%) from Grade X MPLB, and another 35 students (33%) from Grade XII MPLB. Therefore, the distribution of respondents across all grade levels in the MPLB program can be considered relatively balanced. The study received permission from the school, and students were given clear instructions before participating. Participation was voluntary, and all data were kept confidential for research purposes only.

Data collection techniques were conducted through a questionnaire consisting of 42 statements using a Likert scale ranging from 1 to 5. Self-regulated learning was measured using an 18-item questionnaire with indicators including self-evaluations, organize and transform, goal-set and plan, seek information, keep records and monitor, environmental structure, self-consequence, rehearse and memorize, seek social assistance, review records, and other strategies (Zimmerman, 2013). Digital literacy was evaluated using a 12-question survey encompassing indicators such regarding informational & data comprehension, communicate and collab, digital content creation, safety, and problem solve (UNESCO Institute for Statistics, 2018). Academic procrastination was assessed using a 12-item questionnaire that focused on delaying the start and completion of tasks, late submission of assignments, the gap between planning and execution, and prioritizing more enjoyable activities over academic responsibilities (Ferrari et al., 1995).

## RESULTS AND DISCUSSION

### Descriptive Statistical Analysis

Based on the descriptive statistics (Table 2), Self-Regulated Learning scores ranged from 36.00 to 90.00, with a mean of 70.28 and a standard deviation of 8.29, indicating generally high self-regulation among students. Digital Literacy scores ranged from 36.00 to 60.00, with an average of 48.07 and a standard deviation of 5.32, showing moderate to high digital skills. Meanwhile, Academic Procrastination scores ranged from 14.00 to 40.00, with a mean of 27.55 and a standard deviation of 6.04, suggesting a moderate tendency toward procrastination.

Table 2. Descriptive Statistics

Descriptive Statistics					
	N	Min.	Max.	Mean	Std. Deviation
Self-Regulated Learning	106	36.00	90.00	70.2830	8.28510
Digital Literacy	106	36.00	60.00	48.0660	5.32070
Academic Procrastination	106	14.00	40.00	27.5472	6.04449
Valid N (listwise)	106				

**Normality Test**

Table 3 presents the results of the normality test using the One-Sample Kolmogorov-Smirnov test on the unstandardized residuals from 106 observations. The K-S test statistic is 0.082 with an Asymp. Sig. (2-tailed) value of 0.076, indicating that the residuals do not significantly differ from a normal distribution. Since the significance value exceeds 0.05, it can be concluded that the residuals follow a normal distribution and the assumption of normality in the regression model is satisfied.

Table 3. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		106
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	5.55270978
Most Extreme Differences	Absolute	.082
	Positive	.046
	Negative	-.082
Test Statistic		.082
Asymp. Sig. (2-tailed)		.076 <sup>c</sup>

a. Test distribution is Normal.  
 b. Calculated from data.  
 c. Lilliefors Significance Correction.

**Linearity Test**

According to the SPSS output in Table 4, the Deviation from Linearity significance value for the relationship between SRL and academic procrastination is 0.054. Since this value is greater than 0.05, it can be interpreted that the interconnection between the 2 variables is linear. Referring to the SPSS output in Table 5, the significance value for Deviation from Linearity between digital literacy and academic procrastination is 0.054. Since this value is greater than 0.05, it indicates no significant deviation from linearity, meaning the relationship between the two variables can be considered linear.

Table 4. Linearity Test X1 to Y

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Academic Procrastination * Self-Regulated Learning	Between Groups	(Combined) Linearity	1869.474	31	60.306	2.269	.002
		Deviation from Linearity	598.195	1	598.195	22.507	.000
	Within Groups		1271.279	30	42.376	1.594	.054
	Total		1966.790	74	26.578		
			3836.264	105			

Table 5. Linearity Test X2 to Y

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Academic Procrastination * Digital Literacy	Between Groups	(Combined) Linearity	907.670	22	41.258	1.169	.298
		Deviation from Linearity	199.371	1	199.371	5.650	.020
	Within Groups		708.299	21	33.729	.956	.524
	Total		2928.594	83	35.284		
			3836.264	105			

**Multicollinearity Test**

Table 6 displays the results of the multicollinearity test for the independent variables Self-Regulated Learning and Digital Literacy. The tolerance values for both variables are 0.698, which are well above the minimum threshold of 0.10, indicating no concern of

collinearity. Additionally, the Variance Inflation Factor (VIF) values for both predictors are 1.433, far below the critical value of 10.00, further confirming the absence of multicollinearity. These results suggest that the independent variables do not exhibit high intercorrelation, and therefore the regression coefficients can be interpreted reliably.

Table 6. Multicollinearity Test

Model		Coefficients <sup>a</sup>					Collinearity Statistics	
		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Tolerance
		B	Std. Error	Beta				
1	(Constant)	48.206	5.480		8.797	.000		
	Self-Regulated Learning	-.282	.079	-.386	-3.565	.001	.698	1.433
	Digital Literacy	-.018	.123	-.016	-.143	.886	.698	1.433

a. Dependent Variable: Academic Procrastination

### Heteroscedasticity Test

Table 7 presents the results of the heteroscedasticity test using the significance values of the independent variables in a regression model where the dependent variable is the natural log of the residuals (LN\_RES). The significance value for Self-Regulated Learning (X1) is 0.142 and for Digital Literacy (X2) is 0.398. Both values exceed the threshold of 0.05, indicating that there is no statistically significant heteroscedasticity associated with either predictor. Consequently, the regression model satisfies the assumption of homoscedasticity, ensuring that the variance of the residuals remains constant across levels of the independent variables.

Table 7. Heteroscedasticity Test

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients		t
		B	Std. Error	Beta		
1	(Constant)	6.523	1.713		3.807	.000
	Self-Regulated Learning	-.037	.025	-.170	-1.481	.142
	Digital Literacy	-.033	.038	-.097	-.849	.398

a. Dependent Variable: LN\_RES

### Multiple Linear Regression

#### T-test

Table 8 displays the results of the multiple linear regression analysis examining the influence of Self-Regulated Learning (SRL) and Digital Literacy on Academic Procrastination. Both variables exhibit negative unstandardized coefficients: SRL (B = -0.245, p = 0.020) and Digital Literacy (B = -0.279, p = 0.008), indicating statistically significant inverse relationships. This suggests that increases in students' self-regulation and digital competence are associated with reductions in their academic procrastination behaviors. Thus, students who demonstrate stronger self-regulated learning strategies and possess higher digital literacy skills are less likely to delay their academic task.

Table 8. Multiple Linear Regression

Model		Coefficients <sup>a</sup>				
		Unstandardized Coefficients		Standardized Coefficients		t
		B	Std. Error	Beta		
	(Constant)	55.013	5.255		10.469	.000
	Self-Regulated Learning	-.178	.076	-.245	-2.356	.020
	Digital Literacy	-.310	.115	-.279	-2.689	.008

a. Dependent Variable: Academic Procrastination

**F-test**

Table 9 presents the ANOVA results for the F-test, which assesses the joint significance of Self-Regulated Learning and Digital Literacy in predicting Academic Procrastination. The calculated F-value of 13.797 is substantially higher than the critical F-table value of 3.0846 at the 0.05 significance level, with degrees of freedom (2; 103). The associated significance level of 0.000 indicates that the regression model is statistically significant as a whole. Consequently, the null hypothesis ( $H_0$ ) stating that the independent variables have no simultaneous effect on academic procrastination is rejected, and the alternative hypothesis ( $H_a$ ) is accepted.

Table 9. F-test

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	810.606	2	405.303	13.797	.000 <sup>b</sup>
	Residual	3025.659	103	29.375		
	Total	3836.264	105			

a. Dependent Variable: Academic Procrastination

b. Predictors: (Constant), Digital Literacy, Self-Regulated Learning

**Coefficient of Determination Analysis ( $R^2$ )**

Table 10 presents the coefficient of determination ( $R^2$ ) from the multiple linear regression model assessing the impact of Self-Regulated Learning and Digital Literacy on Academic Procrastination. The  $R^2$  value of 0.211 indicates that 21.1% of the variance in academic procrastination can be jointly explained by the two predictor variables. This suggests a moderate explanatory power of the model, with the remaining 78.9% of the variance likely influenced by other unmeasured factors. The adjusted  $R^2$  value of 0.196, which accounts for the number of predictors and sample size, further supports the reliability of this estimation.

Table 10. Coefficient of Determination Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.460 <sup>a</sup>	.211	.196	5.41990

a. Predictors: (Constant), Digital Literacy, Self-Regulated Learning

**Discussion**

The t-test results showing self-regulated learning has a t-count of -2.356 marked by a p-value of 0.020, which is less than 0.05, and a t-table value of 1.983. Since  $|t\text{-count}| > t\text{-table}$ , the null hypothesis ( $H_0$ ) is not accepted. This implies that SRL has a sig. negative impact on academic procrastination among students of the MPLB at SMKN 41 Jakarta. These findings are supported by the results of (Santika & Sawitri, 2016) (Avati & Aisyah, 2019). The t-test results reveal that digital literacy has a t-count of -2.689 with a significance value of 0.008, which is below 0.05, and a t-table value of 1.983. Since  $|t\text{-count}| > t\text{-table}$ , the null hypothesis ( $H_0$ ) is rejected. This indicates that digital literacy has a sig. negative impact on academic procrastination among students in the Office Management and Business Services program at SMKN 41 Jakarta. These results are consistent with previous findings (Agustin & Winarso, 2021) (Yuan et al., 2024) (Brahma & Saikia, 2023).

In reference to the F-test results, the F-count is 13.797, it means bigger than the F-table result of 3.0846. This indicates that self-regulated learning (X1) and digital literacy (X2) together demonstrate a statistically significant effect on academic procrastination (Y). Furthermore, the t-test result show that SRL has a t-count of -2.356 ( $p = 0.020 < 0.05$ ), and digital literacy has a t-count of -2.689 ( $p = 0.008 < 0.05$ ), both exceeding the critical t-table value of 1.983. Therefore,  $H_0$  is rejected for both variables, indicating that each has a significant

negative impact on academic procrastination. Supporting studies such as those by (Anwar & Dwiyanti, 2021) (Fayda-Kinik, 2023) may serve as reinforcement for these findings, although not simultaneously. This is due to the scarcity of research exploring the joint impact of SRL and digital literacy on academic procrastination.

These results emphasize the critical role of both self-regulated learning and digital literacy in reducing academic procrastination among students. Individually, self-regulated learners are more likely to set academic goals, manage their time effectively, and maintain focus, which directly contributes to lower tendencies to procrastinate (Yuan et al., 2024). Likewise, digital literacy enhances students' ability to efficiently access, evaluate, and utilize digital resources, helping them avoid distractions and improve task completion. When considered together, these two competencies synergize to form a more adaptive learning behavior, enabling students to cope with academic demands in a technology-driven environment (Kholifah et al., 2022). This synergy, although not frequently investigated in prior research, provides valuable insights for educators and curriculum developers to design interventions that integrate both cognitive-behavioral and digital skill training to address procrastination issues more holistically (Pazos & Cózar, 2023).

## CONCLUSION AND RECOMMENDATION

As inferred from the analysis and hypothesis testing conducted, several conclusions can be drawn. First, SRL has a significant and negative influence on students' academic procrastination. Second, digital literacy also negatively and significantly affects academic procrastination. Third, both self-regulated learning and digital literacy together have a meaningful and simultaneous impact in reducing students' tendency to procrastinate. These findings underscore the critical role of strengthening students' ability to take control of their own learning processes and enhancing their digital competencies as a strategic effort to minimize academic procrastination and improve learning effectiveness.

This study utilized 50 questionnaire items during the instrument testing phase; however, 8 items were found to be invalid, resulting in the use of only 42 valid items in the final analysis. Future research is encouraged to refine the indicators used to improve the accuracy and reliability of the findings. Moreover, while this study focused specifically on self-regulated learning and digital literacy, future studies are advised to broaden the research scope, explore different research settings, or incorporate additional related variables. This approach would enrich the variety and depth of research outcomes, offering a broader insight into the causes of academic procrastination.

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