

CAKRAWALA PENDIDIKAN

**FORUM KOMUNIKASI ILMIAH DAN
EKSPRESI KREATIF ILMU PENDIDIKAN**

**The Influence of Learning Environment and Student's Attitudes Towards
Student's Reading Comprehension in Senior High School**

**The Influence of Students' Motivation and Visual Learning
Style Toward Students' Reading Comprehension at Junior High School**

***Implementasi Model Pembelajaran Inquiry Berbantuan Metode Index Card
Match Materi Perkiraan (Estimasi) pada Mata Kuliah Statistika Matematika***

**The Influence of Interest and Learning Environment on Senior High School
Students' Narrative Texts Reading Achievement**

**The Influence of Self Regulation And Visual Learning Styles Towards
Students Reading Comprehension in Vocational High School**

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THE INFLUENCE OF SELF REGULATION AND VISUAL LEARNING STYLES TOWARDS STUDENTS READING COMPREHENSION IN VOCATIONAL HIGH SCHOOL

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Abstrak: Dalam konteks pendidikan Sekolah Menengah Kejuruan (SMK), penelitian ini mengkaji kontribusi relatif regulasi diri dan gaya belajar visual terhadap pemahaman membaca siswa. Subjek penelitian ini adalah siswa kelas XI SMK Telkom Brawijaya Blitar. Sebanyak 124 siswa kelas sebelas dipilih menggunakan teknik simple random sampling dalam desain penelitian korelasional kuantitatif dan dianalisis menggunakan analisis regresi berganda. Pengolahan data dilakukan dengan menggunakan perangkat lunak SPSS versi 26. Data dikumpulkan melalui tes pemahaman membaca yang telah divalidasi, skala regulasi diri, dan kuesioner gaya belajar visual. Analisis regresi berganda menunjukkan bahwa meskipun regulasi diri dan gaya belajar visual sama-sama memiliki pengaruh yang signifikan secara statistik terhadap pemahaman membaca, regulasi diri muncul sebagai prediktor yang lebih kuat. Temuan ini menekankan pentingnya menumbuhkan regulasi diri siswa dan memperhatikan preferensi belajar individu untuk meningkatkan kemampuan membaca. Penelitian ini memberikan implikasi pedagogis bagi pendidik dan pengembang kurikulum, dengan menekankan integrasi strategi pengajaran yang kaya akan unsur visual serta intervensi yang bertujuan memperkuat regulasi diri dalam pemahaman membaca bahasa Inggris.

Kata Kunci: regulasi diri, gaya belajar visual, pemahaman membaca

Abstract: In the context of Vocational high school education, this study explored the relative contributions of self-regulation and visual learning style to students' reading comprehension. The subjects in this study were students XI SMK TELKOM BRAWIJAYA Blitar. A total of 124 eleventh-grade students were selected using simple random sampling within a quantitative correlational research design and using multiple regression analysis. To conduct the result researcher used calculated by SPSS 26 version. Data were collected through a validated reading comprehension test, a self-regulation scale, and a visual learning style questionnaire. Multiple regression analysis revealed that while both self-regulation and visual learning style had statistically significant effects on reading comprehension, Self Regulation emerged as the stronger predictor. These findings emphasized the importance of fostering student self-regulation and addressing individual learning preferences to improve reading performance. This study offers pedagogical implications for educators and curriculum developers, emphasizing the integration of visually enriched teaching strategies and interventions aimed at strengthening Self Regulation in English Reading Comprehension.

Keywords: self regulation, visual learning style, reading comprehension

INTRODUCTION

Reading comprehension is a core competency in English as a Foreign Language (EFL) learning and is crucial for academic success, particularly among vocational high school students who must comprehend both academic and technical texts. However, many face difficulties in understanding English reading materials due to limited vocabulary, lack of reading strategies, low motivation, and inadequate instructional support. According to (Grabe & Stoller, 2013), reading ability is

vital not only for academic success but also for shaping a student's intellectual and professional development.

Vocational high school (SMK) students often encounter challenges that hinder their reading comprehension, including lack of motivation and insufficient strategies. (Ridge, 2011) emphasized that this condition impacts students' ability to understand subject matter, including technical documents and manuals that are essential in vocational education.

Previous studies, such as those by (Guthrie et al., 2007) (Nation, 2009), and (Tria et al., 2020), have all confirmed the crucial role of vocabulary, reading integration, and appropriate teaching strategies in improving comprehension.

Self-regulation refers to learners' capacity to manage their learning through goal-setting, monitoring, and evaluating their progress. Visual learning style, meanwhile, emphasizes the use of visual aids and spatial representation in information processing. While both have been individually linked to academic success, their combined influence on reading comprehension within the vocational high school context remains underexplored. This study addresses this gap.

MATERIALS

Reading Comprehension

Reading comprehension is the process of constructing meaning from text through active engagement between the reader and the text. Anderson et al. (2015) describe it as a multidimensional process involving decoding, integrating background knowledge, and applying cognitive and metacognitive strategies. Snow (2024) emphasized comprehension as an interactive and constructive process shaped by the reader's prior knowledge, reading goals, and text complexity. In vocational education, comprehension is critical as students often engage with technical manuals and industry-specific materials.

Self-Regulation

(Zimmerman & J, 2010) defines self-regulation as a process consisting of forethought, performance, and self reflection. This model helps students take control of their own learning by setting goals, monitoring progress, and evaluating outcomes. According to (Pintrich, 1999), students who exhibit self-regulated learning behaviors tend to be more motivated and academically successful.

Research by (Friskilia & Winata, 2018) and (Türkben, 2019) supports the positive correlation between self-regulation and academic performance, especially in reading and comprehension tasks.

Visual Learning Style

Visual learning style is characterized by a preference for receiving information through visual stimuli such as images, diagrams, and written text. (Fleming et al., 1958) introduced the concept of learning styles including visual, auditory, reading/writing, and kinesthetic (VARK). Learners with visual preferences often benefit from instructional materials that use spatial organization and color-coded cues. (Pashler et al., 2008) acknowledge that while learning styles are controversial in some academic circles, tailored visual materials can enhance engagement and understanding.

Empirical evidence from (Rahman, 2016) and (Husin & Adania, 2023) indicates that students with strong visual learning styles perform better in tasks that involve visual aids. (Salamudin & Multazam, 2023) reported that visual learning significantly contributes to cognitive achievement, especially in reading comprehension.

SOME RELATED FINDINGS

Various studies have provided empirical support for the separate and combined roles of self-regulation and visual learning styles in academic performance. For instance, (Baeng et al., 2021) found that self-regulation positively influences student discipline in learning, while (Rahmiyati, 2017) concluded that self-regulated learning strategies contribute significantly to comprehension in economic subjects. (Novita & Latifah, 2014) discovered that self-regulation mediates the relationship between intrinsic motivation and academic success.

In terms of visual learning, research by (Rahman, 2016) highlighted the significant role of visual preference in social studies learning outcomes. (Husin & Adania, 2023) observed that visual learning styles positively affect cognitive performance, especially among high school students. Moreover, studies by (Martini et al., 2016) and (Raiyn, 2016) further supported that visually-oriented instruction enhances high-order thinking and psychomotor skills.

SUMMARY AND RESEARCH GAPS

Despite abundant literature examining self-regulation and learning styles independently, limited research has explored the synergistic impact of these two factors on reading comprehension in the specific context of vocational high school students learning EFL.

Most previous studies focused on general academic outcomes or were conducted at the junior high school and university level, leaving a gap in the understanding of high school learners in technical and applied education environments.

This study contributes to filling this gap by investigating the combined effect of self-regulation and visual learning style on reading comprehension among vocational students. By doing so, it provides insights into how cognitive and perceptual learner characteristics can be integrated into instructional strategies to improve reading outcomes.

METHOD

This research used a quantitative approach applying correlational research design and using multiple regression analysis. According to (Ary, 2010) quantitative research collects numerical data through objective measurement in order to test preconceived notions or provide answers to queries. This research also used multiple regression analysis.

(John and Creswell, 2023) have stated that a correlational method called multiple regression looks at the connections among a number of variables. Researchers can determine the degree to which each independent variable affects the dependent variable by using this method. Therefore, multiple regression analysis helps to understand more complex patterns of connections among variables. This approach was chosen to test the influence of the independent variables, namely Self Regulation and Visual Learning Style on the dependent variable, namely Reading Comprehension.

Population and Sample

Thus, the sample consisted of 124 students, selected using a simple random sampling technique. This method ensured that each student in the population had an equal chance of being included in the study, thereby enhancing the representativeness of the findings.

Sample and Sampling Techniques

The sampling technique used in this research was simple random sampling. This method was chosen because it provides equal

opportunities for each individual in the population to be selected, ensuring unbiased representation.

Based on the population of 180 students, the researcher selected 124 students as respondents. The sampling process involved listing all students of the eleventh grade and assigning them numbers.

Simple random sampling was considered appropriate because it supports objectivity in data collection, minimizes researcher bias, and provides a representative cross-section of the student population. This method aligns with the quantitative nature of the study and facilitates the generalization of the results to the broader student population at SMK Telkom Brawijaya.

Assumption Testing

Before conducting the multiple linear regression analysis, several assumption tests were carried out to ensure that the data met the required criteria. These assumption tests included tests of normality, linearity, multicollinearity, and heteroscedasticity.

Normality Test

The normality test aims to determine whether the data is normally distributed. In the normality test, the researcher used the Kolmogorov-Smirnov test. According to (Pallant, 2016) the level of significance used in this study was 5% with the condition that if the Asymp. sig (2-tailed) value > 0.05 then the data is said to be normally distributed. Conversely, if the Asymp. sig (2-tailed) value < 0.05 then the data is said to be not normally distributed.

Linearity Test

The linearity test aims to determine whether there is a significant linear relationship between the variables under study. If the significance value (p-value) for the linearity test is greater than 0.05, then the relationship between the independent and dependent variables can be considered linear. If the significance value is smaller than 0.05, then the relationship between the independent and dependent variables is not linear.

Multicollinearity Test

The multicollinearity test aims to detect high correlation between independent variables. Multicollinearity exists when the independent variables are highly correlated with each other. According to (Pallant, 2016) Multicollinearity is tested based on the Tolerance value (> 0.1) and VIF (< 10).

Heteroscedasticity Test

To ensure the validity of the regression model, a heteroscedasticity test was conducted to examine whether the residuals (errors) in the

regression model had constant variance. One of the basic assumptions of multiple linear regression is homoscedasticity, which means that the variance of the residuals is constant across all levels of the independent variables

Multiple Regression Analysis

The regression analysis was conducted to identify the individual and combined influence of Self Regulation and Visual Learning Style (VLS) on Reading comprehension. The results included the R-squared value, regression coefficients (β), and p-values to determine the significance of the relationships.

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 x_2$$

Where

Y = Reading Comprehension X_1 = Self Regulation

X_2 = Visual Learning Style (VLS)

β_0 = Constant

β_1, β_2 = Regression coefficient

The regression model was run using SPSS to analyze the influence between Self regulation and Visual Learning Style (VLS) as predictors of Reading comprehension, providing key outputs such as R-squared (R^2), which showed the proportion of variance in Reading comprehension scores explained by the independent variables; regression coefficients (β), which indicated the strength and direction of the relationship between each independent variable and Reading comprehension; and p-values, which will be used to determine the statistical significance of the relationships, with a p-value less than 0.05 indicating that the relationship is statistically significant.

Hypothesis Testing

Partial and simultaneous tests are conducted to ensure that the hypotheses of multiple regression are satisfied. These tests performed using SPSS software to evaluate the individual and combined effects of the predictor variables on the dependent variable.

t-test (Partial)

The t-test employed to statistically analyze and determined the effect of each independent variable on Reading comprehension. This method allowed researchers to assess whether there are significant differences in Reading comprehension scores when comparing groups or conditions associated with the independent variables.

F-Test (Simultaneous)

The F-test will be used to examine whether student visual learning style and self regulation when considered together, have a significant influence on Reading comprehension. This statistical test is ideal for analyzing the joint effect of multiple independent variables on a dependent variable, making it appropriate for this research question.

RESULT AND DISCUSSION

Data Presentation

Descriptive statistics for Self- Regulation (X_1), Visual Learning Style (X_2), and Reading Comprehension (Y) variables consisting mean, standard deviation, minimum, and maximum scores.

Table 1

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
SELF-REGULATION	124	66	188	128.90	26.040
VLS	124	73	217	151.75	30.382
Reading Comp.	124	13	37	24.77	6.415
Valid N (listwise)	124				

Based on Table 1, a total of 124 students participated in this study. The average score for the Self-Regulation variable was 128.90 with a standard deviation of 26.040. The Visual Learning Style variable had an average score of 151.76 and a standard deviation of 30.382. Meanwhile, the Reading Comprehension variable showed an average score of 24.77 with a standard deviation of 6.415. A higher standard deviation indicates a greater variation in students' responses.

Classic Assumption Test

- Normality Test: To ensure the residuals are normally distributed. Normality test was performed using the Kolmogorov-Smirnov test.

One-Sample Kolmogorov-Smirnov Test				
		X ₁	X ₂	Y.
N		124	124	124
Normal Parameters a,b	Mean	128.90	151.75	24.77
	Std. Deviation	26.040	30.382	6.415
Most Extreme Differences	Absolute	.065	.069	.065
	Positive	.055	.069	.056
	Negative	-.065	-.066	-.065
Kolmogorov-Smirnov Z		.719	.772	.722
Asymp. Sig. (2-tailed)		.679	.591	.674
a. Test distribution is Normal.				
b. Calculated from data.				

Based on Table 2, the normality test results show that all variables are normally distributed, as indicated by the significance values: Self-Regulation (0.679), Visual Learning Style (0.591), and Reading Comprehension (0.674), all of which are greater than 0.05.

Table 3 Linearity Test

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Reading Comp. * VLS	Between Groups	(Combined)	4359.345	44	99.076	11.144	.000
		Linearity	2251.628	1	2251.628	253.268	.000
		Deviation from Linearity	2107.718	43	49.017	5.514	.000
	Within Groups		702.332	79	8.890		
	Total		5061.677	123			

Based on the table 3, it can be explained that the significance value for the linearity test was less than 0.05 (0.000<0.05), it means that there is no linearity relationship between the variables Self-regulation (X1)

Table 4 Multicollinearity Test

C. coefficients										
Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	Correlations		
		B	Std. Error	Beta				Zero-order	Partial	Part
	(Constant)	1.232	2.416			.510	.611			
	SELF-REGULATION	.042	.020	.171		2.066	.041	.507	.185	.138
	VLS	.119	.017	.685		6.824	.000	.667	.527	.454
								Tolerance		
								VIF		

Based on the table 4.4, it can be explained that the results of the analysis show that the Tolerance value for Self-Regulation and Visual Learning Style is 0.646 (>0.1) and the Variance Inflation Factor (VIF) value is 1.548 (<10). So it can be concluded that there is no multicollinearity.

Table 5 heteroscedasticity

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	2.157	1.465		1.472	.144
	SELF-REGULATION	-.003	.012	-.027	-.243	.808
	VLS	.013	.011	.135	1.202	.232

Based on Table 4.5, the significance values for self-regulation (X1) is 0.808 and visual learning style (X2) is 0.232. it means that both self-regulation and visual learning style are greater than 0.05. This indicates that there is no heteroscedasticity present between X1 and X2.

Table 6 Regression Analysis Test

The multiple linear regression equation is:

$$Y = 1.232 + 0.042X_1 + 0.119X_2$$
where Y is reading comprehension, X₁ is self-regulation, and X₂ is visual learning style. The constant (1.232) shows the predicted reading score when both predictors are zero. Each 1-point increase in self-regulation raises reading comprehension by 0.042,

Coefficients ^a				
Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
	(Constant)	1.232	2.416	
	Self-Regulation	.042	.020	.171
	VLS	.119	.017	.565

and each 1-point increase in visual learning style raises it by 0.119, assuming other variables stay constant.

Table 7 Partial Test

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.232	2.416		.510	.611
Self-Regulation	.042	.020	.171	2.066	.041
VLS	.119	.017	.565	6.824	.000

Since the sig. Value for both variables self-regulation (0.041) and visual learning style (0.000) is less than 0.05, then the H_1 is accepted. It means that both self-regulation and visual learning style have a significant partial influence on students' reading comprehension.

Table 8 Simultaneous Test

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2347.355	2	1173.677	52.321	.000 ^b
	Residual	2714.323	121	22.432		
	Total	5061.677	123			
a. Dependent Variable: Reading Comp.						
b. Predictors: (Constant), VLS, SELF-REGULATION						

Since the significance value is less than 0.05 for both variables, then H_1 is accepted. This means simultaneously, Self-regulation (X_1) and Visual learning style (X_2) have a significant effect on Reading comprehension (Y).

Table 9

Model Summary ^b								
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics			
					R Square Change	F Change	df1	df2
1	.681 ^a	.464	.455	4.736	.464	52.321	2	121
a. Predictors: (Constant), VLS, SELF-REGULATION								
b. Dependent Variable: Reading Comp.								

Based on the above table, the score R^2 value = 0.464%, this means that 46.4% of the variation in reading comprehension can be explained by the variables of Self Regulation and Visual Learning Style.

The remaining 53.6% is influenced by other variables that was not studied.

DISCUSSION

The results of the analysis show that: Self-regulation (X_1) significantly affects reading comprehension, supporting Zimmerman's theory that students with strong self-regulation achieve better academic outcomes.

Visual learning style (X_2) also significantly influences reading comprehension, in line with Pashler's theory that learning styles affect how students process and understand information. Both variables together have a significant impact on reading comprehension, though other factors may also contribute. Thus, the hypothesis in this study is proven: "There was a significant influence simultaneously and partially between Self regulation and Visual learning style on Reading comprehension". This research presents several novelties that distinguish it from previous studies. While many earlier studies have explored the influence of either self-regulation or visual learning style on various academic outcomes, such as learning discipline (Baeng et al., 2021), comprehension in economics (Rahmiyati, 2017), academic achievement (Novita & Latifah, 2014)(Friskilia & Winata, 2018) or general cognitive learning outcomes (Husin & Adania, 2023), few have specifically examined the combined effect of self-regulation and visual learning style on English reading comprehension especially in the context of senior high school students in Indonesia.

Unlike previous studies that often focused on university students or non-language subjects (e.g., economics, social studies, or biology), this research narrows its focus to English reading comprehension, a domain where both cognitive strategy (self-regulation) and perceptual preference (visual learning style) are essential. By doing so, this study fills a gap in the literature by investigating how metacognitive and learning style factors interact to influence reading skills a vital skill to language learning but underexplored in this context.

In terms of theoretical innovation, this study integrates self-regulated learning theory (Zimmerman, 2002) with learning style theory (Fleming et al., 1958) and applies them concurrently to the domain of EFL reading comprehension. Previous research generally examined these theories separately, or focused on only one independent variable. The novelty here lies in the integration of two theoretical perspectives within a single predictive framework, thereby offering a more holistic understanding of factors influencing reading comprehension.

CONCLUSION

Based on the results of the statistical analysis, it can be concluded that both self-regulation and visual learning style have a positive and statistically significant influence on students' reading comprehension in vocational high schools. The t-test results support this conclusion, confirming the important role these two variables play in enhancing students' understanding of English texts.

The self-regulation variable significantly contributes to reading comprehension, with a p-value of 0.041 (< 0.05). This indicates that students who engage in goal setting, strategic planning, and self-monitoring tend to achieve better results in reading tasks. These findings highlight the importance of fostering autonomous and reflective learning behaviors to improve reading performance.

Similarly, the visual learning style variable shows a strong positive effect, with a highly significant p-value of 0.000. Students who prefer visual aids like images, diagrams, or spatial arrangements demonstrate better comprehension of written materials. This suggests that reading instruction in vocational settings should integrate strategies that support self-regulated learning and cater to visual learning preferences to maximize student outcomes.

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