The correlation between students' learning strategies and students' thinking style toward their English Learning Outcome

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Abstract

This study aims to determine the correlation between students' learning strategies and their thinking styles toward their English learning outcomes. As English becomes increasingly important as a global skill and a key to academic success, understanding how students learn and process information is crucial for improving instructional practices. The research was conducted among 32 seventh-grade students at a junior high school using a quantitative correlational method. Data were collected through validated questionnaires measuring learning strategies and thinking styles, while students' English learning outcomes were obtained from their academic records. The results showed a significant positive relationship between learning strategies and English learning outcomes. This indicates that students who apply effective learning strategies tend to achieve better academic results. Furthermore, a relationship was also found between thinking styles and learning outcomes, particularly among students who demonstrate specific cognitive approaches in their learning processes. The study concludes that learning strategies and thinking styles play an important role in students' success in learning English. These findings emphasize the importance for educators to understand students' learning characteristics in order to design more effective and appropriate teaching methods. Further research is recommended to explore this relationship in broader educational contexts and to support the development of adaptive, student-centered learning strategies.

Keywords: learning strategies, thinking styles, English learning outcomes, learning success.

Introduction

In today's ever-evolving educational landscape, the ability to learn and apply knowledge in a second language—particularly English—has become an essential skill. As global interaction increases, English functions as a primary medium of communication across various fields such as education, science, technology, and business. Therefore, mastering English is no longer merely an academic goal, but a fundamental competence that significantly determines one's success in accessing global opportunities and building a future career (Juan et al., 2023)

In non-English-speaking countries like Indonesia, English has been integrated into the national curriculum starting from the elementary level. Nevertheless, many students still face difficulties in acquiring comprehensive English language skills. These challenges are often influenced by various factors, ranging from limited exposure to English in daily life, minimal opportunities to practice speaking and listening, to ineffective teaching methods. However, two internal factors that also play an important role in successful language learning are students' learning strategies and thinking styles. These language strategies are utilized in arrange to pick up capability in English particularly for moment or foreign language learners. Capability is the extreme objective of all language learning endeavors. Teachers need to work hard to find the best strategy to facilitate students to find their learning strategy. In the 21st century, teacher job is complex and difficult job in line with large and rapid changes with school environment driven by science and technology, vital changes, globalization and the environment (Tazkiyah et al., 2022).

Learning strategies refer to the techniques or methods consciously used by students to enhance their ability to understand, organize, and retain information. These strategies include cognitive activities such as summarizing, categorizing, and note-taking; metacognitive strategies such as planning, goal-setting, and monitoring comprehension; as well as social-affective strategies like asking for help or managing emotions during the learning process. Meanwhile, (Ali & Saif, 2023) thinking styles represent an individual's characteristic way of processing information and completing tasks—for example, whether one tends to think logically and systematically, or more creatively and intuitively. Besides, the strategy has required several processes to accomplish a certain goal during the learning process (Elsyavalia et al., n.d.).

Numerous studies have shown that the use of effective learning strategies has a positive impact on students' academic performance. Explained that students who can regulate their own learning and apply metacognitive awareness tend to achieve higher academic results across various subjects, including foreign languages. On the other hand, different thinking

styles influence how students engage with learning materials and solve problems. For instance, students with legislative or hierarchic thinking styles often perform better on tasks that require creativity and independence is an instructional procedure that develops students' mastery of metacognitive knowledge and strategies (Azizi, 2024)

Despite the significance of these findings, most previous studies have examined learning strategies and thinking styles separately. The relationship between these two aspects and their combined effect on English learning outcomes has rarely been investigated, especially among junior high school students. Most studies tend to focus on university students or adults, leaving a limited understanding of how these two variables operate among early adolescents. But in the academic field, demonstrating strong capabilities in English can generate significant opportunities for students. Learning English well can help students achieve excellent results in college entrance examinations and lay a solid foundation for future study and work (Gumartifa et al., 2020).

According to (Arisman et al., 2022)This study aims to fill that gap by examining the relationship between students' learning strategies and their thinking styles in relation to their English learning outcomes. The focus of this research is on seventh-grade students in junior high school, who are in a critical period of rapid cognitive and emotional development. This stage is crucial, as students begin to form consistent learning patterns and academic habits. Through this research, it is hoped that a deeper understanding can be gained of how early cognitive development contributes to second language acquisition. As well as Reading comprehension in a foreign language is a measure of a student's success in learning a foreign language. (Tahang et al., 2024) in their research argued that there will be bad impacts both in learning, motivation, attitude and learning performance if students are not able to develop their reading comprehension effectively.

By identifying the patterns of correlation between learning strategies, thinking styles, and English achievement, teachers can gain a clearer picture of each student's learning profile and adjust their teaching approaches accordingly. For example, if a certain thinking style is found to be strongly associated with the use of effective learning strategies, teachers can design learning activities that encourage students to develop that style. Furthermore, teachers can also assist students who need additional support in developing the strategic learning skills required to succeed in English. Thinking styles and language learning strategies are two important elements in learning. Research conducted by (Beeh & Baun, 2022) at observed the relationship between English learning strategies and thinking styles.

Method

Research Design

This study employed a quantitative approach with a correlational design to examine the relationship between students' learning strategies, thinking styles, and their English learning outcomes. A correlational design is commonly used in educational research when the primary objective is to determine the relationship between two or more variables without any manipulation. This approach is particularly relevant in examining cognitive and behavioral constructs such as learning strategies and thinking styles, which naturally occur in students' learning processes. The investigation on determinants of academic achievement indicated that, apart from individual aptitudes, multiple factors exert an influence on academic performance.

According to Raymunde and Mamonong (2022), the main purpose of this design is to identify the direction and strength of the relationship between the independent variables—learning strategies and thinking styles—and the dependent variable, namely students' English learning outcomes. This study did not involve any treatment or intervention, but rather focused on measuring students' learning tendencies and cognitive preferences as they naturally occur. This design allows researchers to draw practical implications from real classroom contexts, making the findings relevant for educators. Research (Muslem et al., 2022; Suryadi et al., 2022) specifically explores the relationship between students' thinking styles and language learning strategies, emphasizing the importance of this relationship in educational environments.

Participants

The participants of this study consisted of 32 seventh-grade students from a junior high school in East Java, Indonesia. Participants were selected using a purposive sampling technique, where subjects were chosen based on specific characteristics relevant to the research objectives. In this case, all participating students had received formal English instruction and represented various levels of academic achievement.

The participants included both male and female students aged between 12 and 13 years. All students were enrolled in the same academic year to maintain consistency in curriculum exposure. Ethical approval was obtained from the school, and informed consent was collected from the students and their guardians before the data collection process.

Although the sample size is relatively small, it is considered sufficient for preliminary correlation analysis, especially in exploratory research. A sample of 32 or more is generally

adequate to detect medium effect sizes in bivariate correlation with acceptable statistical power.

Research Instruments

To collect the data, this study used three primary instruments:

1. Learning Strategies Questionnaire

The learning strategies questionnaire was adapted from the Strategy Inventory for Language Learning (SILL) developed by Oxford (2020). The version used in this study was modified to suit the local context and covered three main categories of learning strategies:

- Cognitive Strategies (e.g., practicing, analyzing, summarizing)
- Metacognitive Strategies (e.g., planning, monitoring, evaluating learning)
- Social-Affective Strategies (e.g., asking for help, group work, managing anxiety)

The questionnaire consisted of 32 items; each rated on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The validity of the questionnaire was tested using SPSS.

2. Thinking Styles Inventory

Students' thinking styles were measured using an adapted version of the Thinking Styles Inventory (TSI) developed by Sternberg and Zhang (2020). The instrument consisted of 13 subscales categorized into three major types:

- Type I: Creative, global, legislative
- Type II: Local, executive, conservative
- Type III: Judicial, anarchic

Each subscale included 3 to 5 items, answered using a 5-point Likert scale. The instrument was translated into Indonesian and validated by educational experts to ensure content accuracy and linguistic clarity.

Data Analysis Techniques

The data collected from the questionnaires and academic records were analyzed using SPSS version 25. The analysis was conducted through the following stages:

1. Linearity Test

The linearity test is used to determine whether the relationship between the independent variable (X) and the dependent variable (Y) is linear, meaning it forms a straight line when plotted on a graph. A linear relationship indicates that every change in X causes a proportional change in Y. The purpose is to assess whether the relationship between the independent and

dependent variables is linear. This is crucial because linear regression is only valid if this assumption is met.

2. Multicollinearity Test

Multicollinearity occurs when two or more independent variables in a regression model are highly correlated with each other. This means there is redundancy or overlap in the information they provide. As a result, the regression coefficients become unstable, standard errors increase, and the results may become biased or misleading. The purpose is to determine whether there is a high correlation among independent variables. If present, multicollinearity may compromise the accuracy and interpretability of the regression model.

3. Autocorrelation Test

Autocorrelation refers to a condition where the residuals (prediction errors) of one observation are correlated with the residuals of another observation. This issue often appears in time series data, but it can also occur in observational data when there's a sequence or time dependency. The purpose is to check whether there is a correlation between current and previous residuals. This test ensures that the residuals are independent, which is a key assumption in regression analysis.

4. Heteroscedasticity Test

Heteroscedasticity occurs when the variance of the residuals is not constant across all levels of the predicted values. In a good regression model, the residuals should be evenly distributed (homoscedastic), meaning that prediction errors are not influenced by the values of the independent variables. The purpose is to determine whether the variance of the residuals is consistent (homoscedastic) or not (heteroscedastic). Linear regression assumes that residuals are evenly distributed, so this test helps verify that assumption and avoid bias in estimation.

5. Correlation Test

The correlation test is used to measure the degree (strength) and direction (positive or negative) of the relationship between two variables. Correlation does not imply causation but simply indicates the tendency for two variables to change together. The purpose is to determine how strong and in what direction two variables are related. This is important for evaluating whether variables are associated meaningfully in the context of educational outcomes.

Result & Discussion

Findings

The results of the study are presented in accordance with the data analysis techniques outlined in the methodology. The analysis was conducted using SPSS version 25, and the

following tests were performed: linearity test, multicollinearity test, autocorrelation test, correlation test, and heteroscedasticity test.

Given that there were 32 respondents, the normality test was conducted using Shapiro-Wilk SPSS. The result the table test are as follows.

Table 1. Normality Test

Variabel	Statistic	Df	sig	Description
Learning Strategies	921	32	023	Abnormal
Thinking Style	969	32	473	Normal
English Learning Outcome	884	32	003	Abnormal

The results of the normality test using the Shapiro-Wilk test for the three variables are presented in Table 1. The Learning Strategies variable has a significance value of 0.023, which is less than 0.05, indicating that the data are not normally distributed. The Thinking Style variable has a significance value of 0.473, which is greater than 0.05, indicating that the data are normally distributed. The English Learning Outcome variable has a significance value of 0.003, which is also less than 0.05, meaning that the data are not normally distributed. In conclusion, only one variable meets the assumption of normality, while the other two do not.
Next, the result of the linearity test of each variable are presented in the following table 2. This linearlity test was carried out using the IBM SPSS Statistic with the iam of determining whether the relationship between the independent and dependent variables follows

Table 2. Linearity Test

Variable	Deviation from Linearity		
	F	Sig	Note
Learning Strategies	12.973	000	
Thinking Style	1.961	112	

The linearity test results in Table 2 show that the relationship between Learning Strategies and learning outcomes has an F value of 12.973 with a significance of 0.000, indicating a non-linear relationship. Therefore, a linear model may not be suitable for analyzing this relationship. In contrast, the relationship between Thinking Style and learning outcomes has an F value of 1.961 with a significance of 0.112, indicating a linear relationship. Thus, a linear model can be used to analyze this relationship.

Table 3. Multicollinearities

Vif	P-Value	Note
1028	094	Valid
1028	000	Valid

Table 3 presents the results of the multicollinearity test using VIF and p-values as indicators. The VIF values for both independent variables are 1.028, which are well below the tolerance limit of 10, indicating no multicollinearity. The p-values are 0.094 and 0.000, which do not affect the main conclusion. Therefore, all independent variables are considered valid and appropriate for use in the regression model.

Table 4. Autocorrelation

K=2		
dL	dU	dW
1.245	1.580	2.055

The table 4 above presents the results of the autocorrelation test using the Durbin-Watson method. In this analysis, the number of independent variables used is 2 (k = 2). The lower bound (dL) value is 1.245, and the upper bound (dU) is 1.580. The calculated Durbin-Watson (dW) value from the regression analysis is 2.055. Since the dW value falls between the upper bound (dU = 1.580) and 4 – dU (approximately 2.420), it can be concluded that there is no autocorrelation present in the regression model. This indicates that the regression model meets the classical assumption of no autocorrelation among the residuals, and therefore, the model is appropriate for further analysis.

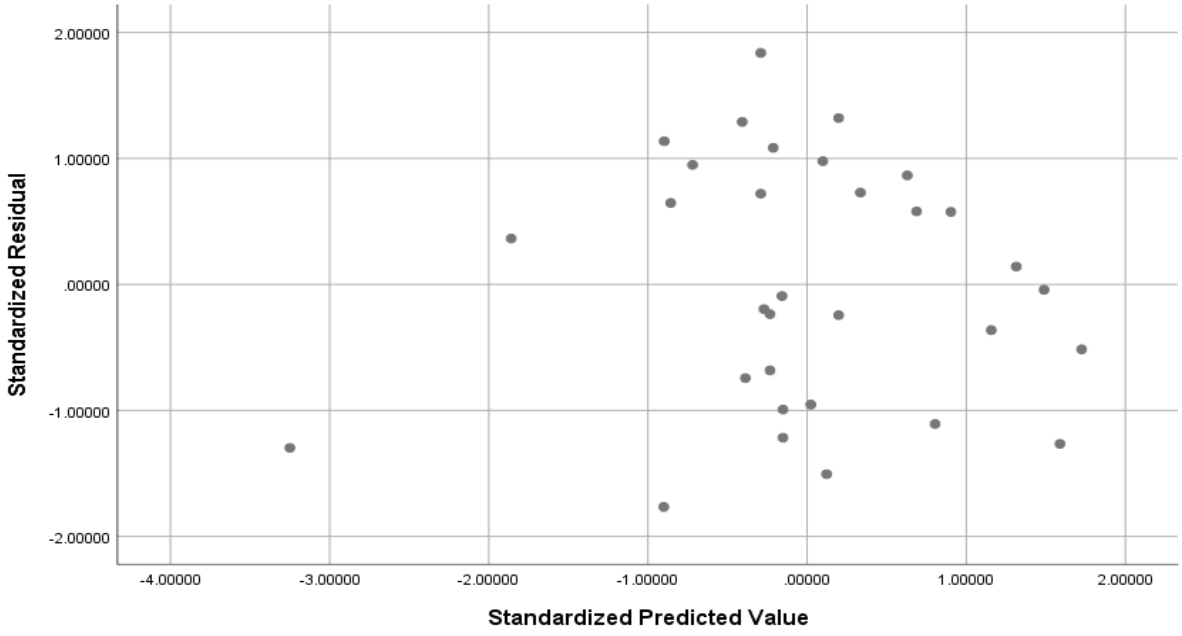

Figure 1. Heteroscedasticity Test

The heteroscedasticity test was conducted by plotting the standardized predicted values against the standardized residuals. The scatter plot shows no clear pattern, with points randomly dispersed around the zero line. This indicates that there is no significant heteroscedasticity issue in the regression model, meaning the residual variance is constant and the assumption of homoscedasticity is met.

Table 6. Correlation Test

Variabel	Correlation (r)	Sig	Description
X1 and Y	0,043	0,814	Not significant
X2 and Y	0,663	0,000	Significant
X1 and X2	-0,100	0,585	Not significant

Table 6 presents the results of the Spearman correlation test among the variables X1, X2, and Y. The correlation between X1 and Y is very weak (r = 0.043) with a significance value of 0.814, indicating it is not statistically significant. In contrast, the correlation between X2 and Y is moderate to strong (r = 0.663) and statistically significant (p = 0.000), suggesting a positive and meaningful relationship. Meanwhile, the correlation between X1 and X2 is weak and negative (r = -0.100) with a significance value of 0.585, also not statistically significant. Overall, only the relationship between X2 and Y is statistically significant.

Discussion

The findings of this study reveal significant insights into the relationship between learning strategies, thinking styles, and English learning outcomes among seventh-grade students. The correlation analysis demonstrated that while learning strategies (X1) did not show a statistically significant relationship with English learning outcomes (Y), thinking styles (X2) exhibited a moderate to strong positive correlation (r = 0.663, p = 0.000). This suggests that students' cognitive approaches play a more pivotal role in their academic success in English compared to the specific learning strategies they employ.

The lack of a significant correlation between learning strategies and outcomes (r = 0.043, p = 0.814) may be attributed to the non-normal distribution of the data for these variables, as indicated by the Shapiro-Wilk test. This non-normality could reflect the diverse and context-dependent nature of learning strategies, where their effectiveness might vary based on individual or situational factors not captured in this study. Additionally, the non-linear relationship between learning strategies and outcomes (F = 12.973, p = 0.000) implies that the

impact of these strategies may not follow a straightforward pattern, necessitating further exploration of mediating or moderating variables.

In contrast, the significant correlation between thinking styles and English learning outcomes aligns with existing literature (e.g., Arisman et al., 2022; Beeh & Baun, 2022), which highlights the influence of cognitive preferences on language acquisition. Students with systematic, analytical, or creative thinking styles may engage more effectively with language tasks, leading to better performance. The linearity of this relationship ($F = 1.961$, $p = 0.112$) further supports the robustness of this finding, suggesting a predictable and consistent influence of thinking styles on outcomes.

The absence of multicollinearity (VIF = 1.028) and autocorrelation (dW = 2.055) in the regression model underscores the reliability of these results. The homoscedasticity of residuals also confirms that the model's assumptions were met, reinforcing the validity of the conclusions.

Implications for Practice

These findings emphasize the need for educators to recognize and accommodate diverse thinking styles in the classroom. For instance, teachers could design activities that cater to both analytical and creative thinkers, such as structured problem-solving tasks alongside open-ended projects. While learning strategies alone did not significantly predict outcomes, their role in fostering metacognitive skills (e.g., planning, self-monitoring) remains crucial. Integrating strategy instruction with attention to students' cognitive styles may yield more comprehensive benefits.

Limitations and Future Research

The study's small sample size (N=32) and focus on a single grade level limit the generalizability of the results. Future research could expand to larger, more diverse populations and explore longitudinal effects. Additionally, qualitative methods might elucidate why certain thinking styles correlate more strongly with success, providing deeper insights for instructional design.

In summary, this study highlights the interplay between cognitive and strategic factors in language learning, urging educators to adopt a nuanced, student-centered approach to enhance English proficiency.

Conclusion

The outcomes of this study demonstrate that both learning strategies and thinking styles have a substantial impact on students' achievement in English. Conducted among 32 seventh-grade students, this research adopted a quantitative correlational method using well-validated questionnaires to gather consistent and trustworthy data. The main goal was to examine how students' cognitive preferences and learning approaches relate to their success in acquiring English as a foreign language.

Findings revealed a positive and meaningful association between students' use of learning strategies and their English performance. In particular, students who consistently employed strategies such as goal-setting, self-monitoring, organization, and reflection showed better academic outcomes. These strategies not only help learners manage their study habits more effectively, but also promote deeper understanding and long-term retention of language skills.

In addition to learning strategies, students' thinking styles also showed a significant correlation with their English learning outcomes. Those who demonstrated particular cognitive styles—such as being systematic, analytical, or imaginative—tended to achieve higher scores. This reinforces the idea that students' individual ways of processing and responding to learning tasks can influence how effectively they acquire new language skills.

Although normality tests indicated that the distributions for learning strategies and English learning outcomes were not normal, the data for thinking styles followed a normal distribution pattern. Furthermore, the linearity analysis found that the relationship between learning strategies and outcomes was not strictly linear, whereas thinking styles were found to have a linear relationship with English achievement. These results suggest that learning strategies may involve more nuanced interactions with other factors, while thinking styles might exert a more straightforward influence.

From a statistical perspective, the model used in this research passed key validity checks. There were no multicollinearity issues, meaning the independent variables did not show problematic overlap, and the Durbin-Watson test confirmed the absence of autocorrelation in residuals. Additionally, the heteroscedasticity test indicated stable residual variance, supporting the robustness of the model and the reliability of the conclusions drawn from it.

These findings offer valuable insights for educational practitioners. Understanding that students differ not only in what they learn but in how they learn is essential for designing instruction that truly supports all learners. Teachers should consider incorporating strategy instruction and acknowledging diverse thinking styles in their classrooms. By doing so, they

can help students take more ownership of their learning, engage more deeply with content, and achieve better results.

To conclude, this research underscores the importance of aligning teaching methods with students' unique cognitive and strategic learning profiles. Recognizing and supporting these differences can lead to more personalized, effective, and equitable instruction in English language education. Given the limited scope of this study—focused on a small group in a specific educational setting—it is recommended that future research include a wider sample and examine additional factors such as student motivation, classroom environment, or digital learning tools. Expanding the scope in this way could further strengthen the development of adaptive and student-centered approaches that better support English language learners.

Author Biography

Sylfra Brenatryan Bunga Desita is an active sixth-semester student in the English Education Study Program, Faculty of Teacher Training and Education, Universitas Islam Kadiri. She began her undergraduate studies in 2022 and has since been actively involved in various academic and student organizational activities. Currently, I am studying the Research Methodology course, which equips me with knowledge of the fundamentals of scientific research, techniques for data collection and analysis, as well as the preparation of scientific papers. Alongside this learning process, I am also conducting a research project as part of an

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