

Self-Efficacy and Learning Independence as Predictors of Students' Mathematical Problem-Solving Ability

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Abstract: This study aims to determine whether self-efficacy and learning independence influence students' mathematical problem-solving abilities, either partially or simultaneously. This study uses a quantitative approach with an ex post facto method. The population in this study consists of all 10th grade TJKT students at SMK PGRI 2 Taman, totaling 136 students. Cluster random sampling was used in the sampling process, with one class randomly selected as the experimental class, consisting of 33 students. Data were collected through questionnaires and tests, with instruments consisting of a self-efficacy questionnaire with 25 statements, a learning independence questionnaire with 26 statements, and a mathematical problem-solving ability test with 6 essay questions, which had been tested for validity, reliability, difficulty level, and discriminating power, with a significance level of 5%. Data analysis techniques used simple linear regression analysis with a t-test to determine partial effects, and multiple linear regression with an F-test to determine simultaneous effects. The research results indicate that: (1) self-efficacy influences students' mathematical problem-solving ability, with a contribution of 18.3%; (2) learning independence does not influence students' mathematical problem-solving ability, with a contribution of only 2.9%; (3) self-efficacy and learning independence together influence students' mathematical problem-solving ability, with a contribution of 24.3%.

Keywords: *Self-Efficacy, Learning Independence, Mathematical Problem-Solving Ability*

INTRODUCTION

Mathematics is an essential subject that must be mastered at every level of education because it plays a role in honing logical, analytical, and critical thinking skills. According to the National Council of Teachers of Mathematics (NCTM) in Anggraeni and Dewi (2021), mathematics education aims to develop five mathematical skills, one of which is mathematical problem-solving ability, which is considered crucial because it is applicable in everyday life (Syafira et al., 2023).

However, the problem-solving ability of Indonesian students is still relatively low. The 2022 PISA results show that Indonesia's mathematics score has dropped to 366, far below the Organisation for Economic Co-operation and Development (OECD) average of 472 (OECD, 2023). A similar phenomenon occurs at SMK PGRI 2 Taman, particularly in class X TJKT, where many students struggle to solve word problems such as those in the SPLDV topic. Students' work showed errors in understanding information, creating mathematical models, and drawing appropriate conclusions.

Based on interviews with teachers, it was found that the low problem-solving ability is likely related to low self-efficacy and learning independence among students. Students tend to complain when given assignments, even refusing to complete them, and show high dependence on peers during learning. However, self-efficacy plays a crucial role in building confidence when facing mathematical problems (Septiani, 2022), while learning independence enables students to learn actively and independently (Reski et al., 2019).

Previous studies support this hypothesis. Sa'adah et al. (2021) found that self-efficacy influences problem-solving ability by 66.2%. Salsabila et al. (2023) also found that learning independence had an influence of 17.64%, and Zulkarnain et al. (2023) stated that both variables together influenced problem-solving ability by 61.9%.

Therefore, the researcher is interested in empirically testing whether self-efficacy and learning independence influence mathematical problem-solving ability both partially and simultaneously among tenth-grade students at SMK PGRI 2 Taman in the 2024/2025 academic year on statistics material.

METHODOLOGY

This study was conducted at SMK PGRI 2 Taman. The approach used in this study was a quantitative approach with an ex post facto method, in which the relationship between variables was examined without manipulation of the independent variables. The variables in this study are self-efficacy (X_1) and learning independence (X_2) as independent variables, and mathematical problem-solving ability (Y) as the dependent variable. This study adopts a research design according to Sugiyono (2013), as shown in Figure 1 below:

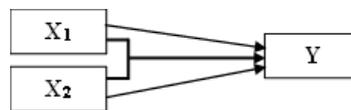


Figure 1. Research Design

Description:

X_1 : self-efficacy

X_2 : learning independence

Y : mathematical problem-solving ability

→ : partial influence

→→ : simultaneous influence

The population in this study consisted of all 10th grade students majoring in TJKT, totaling 136 students. The research sample consisted of 33 students from class X TJKT 3, using cluster random sampling techniques through online lottery. This technique was chosen because the population was already divided into homogeneous classes.

Three types of instruments were used in this study, including a self-efficacy questionnaire consisting of 25 statements, a learning independence questionnaire consisting of 26 statements, and a mathematical problem-solving ability test consisting of 6 questions, which had been tested in class X TJKT 4 at SMK PGRI 2 Taman.

The data analysis techniques in this study consisted of descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis was used to describe the data through the mean, median, mode, variance, standard deviation, minimum, and maximum values. Inferential analysis in this study was used to respond to the problem formulation through data presentation. The first hypothesis was analyzed using simple linear regression, with the following steps: (1) determining the regression equation; (2) testing classical assumptions, which included testing the normality of residuals, linearity, and heteroscedasticity; (3) t-test; and (4) testing the coefficient of determination. The second hypothesis test was also analyzed using simple linear regression, with the following steps: (1) determining the regression equation; (2) classical assumption tests consisting of residual normality tests, linearity tests, and heteroscedasticity tests; (3) t-tests; and (4) coefficient of determination tests. The third hypothesis was tested using multiple linear regression analysis, with the following steps: (1) determining the multiple linear regression equation; (2) classical assumption tests consisting of residual normality tests, linearity tests, multicollinearity tests, and heteroscedasticity tests; (3) F-tests; and (4) coefficient of determination tests.

RESULTS AND DISCUSSION

Results

This study was conducted at SMK PGRI 2 Taman among 10th-grade TJKT students in the second semester of the 2024/2025 academic year. Based on the analysis results, the data on students' self-efficacy (SE), learning independence (KB), and mathematical problem-solving ability (KPM) are described in Table 1 below:

Table 1. Summary of Descriptive Statistics

Data Distribution	SE	KB	KPM
Mean	81,303	80,333	55,253
Median	82	82	56,667
Mode	78	93	75
Highest Value	114	119	80
Lowest Value	57	58	20
Standard Deviation	12,322	14,024	18,282
Variance	151,843	196,667	334,222

First Hypothesis Testing

At this stage, a simple linear regression analysis was conducted and tested using a t-test to determine the effect of the self-efficacy variable (X_1) on mathematical problem-solving ability (Y). Based on the analysis, the following simple linear regression equation was obtained:

$$\hat{Y} = 3,598 + 0,636X_1$$

In this equation, the constant value of 3.598 indicates that if self-efficacy is zero, mathematical problem-solving ability is estimated to be 3.598. The regression coefficient for self-efficacy (X_1) of 0.636 indicates that each one-unit increase in self-efficacy will increase mathematical problem-solving ability by 0.636 units.

Before testing the hypothesis using the t-test, to ensure that the applied linear regression model meets the validity requirements, classical assumption tests were conducted, consisting of residual normality tests, linearity tests, and heteroscedasticity tests. The normality test was conducted to identify whether the residual data had a normal distribution pattern or not, using the Liliefors method. The test criterion was that if $L_{value} < L_{table}$, then H_0 was accepted, meaning that the regression model was normally distributed. Referring to Table 2, it is found that $L_{value} = 0,090$. Meanwhile, at $\alpha = 5\%$ and $n = 33$, the value of $L_{table} = 0,154$ is obtained. Because $L_{value} < L_{table}$, H_0 is accepted, meaning that the regression model is normally distributed.

Table 2. Summary of Residual Normality Test Results (First Hypothesis)

L_{value}	L_{table}	Conclusion	Description
0,090	0,154	$L_{value} < L_{table}$ (H_0 accepted)	Normally distributed

The linearity test is intended to identify whether the relationship between the independent and dependent variables forms a linear pattern. The test criterion is that if the $F_{value} < F_{table}$, then H_0 is accepted, meaning the regression model is linear. Table 3 summarizes the linearity test calculations. Referring to the table, it can be seen that the variables studied have $F_{value} < F_{table}$, so it can be concluded that the regression model is linear.

Table 3. Summary of Linearity Test Results

Line Tested	F_{value}	F_{table}	Conclusion
X_1 against Y	0,763	2,764	$F_{value} < F_{table}$ (H_0 accepted)

The test for heteroscedasticity aims to detect whether there are differences in the variance of errors in each prediction in the regression model. In this study, the Glejser test was used, with the criterion that if $|t_{\text{value}}| < t_{\text{table}}$, then H_0 is accepted, meaning that the regression model does not exhibit heteroscedasticity. Referring to Table 4, it is shown that the variables studied have values of $|t_{\text{value}}| < t_{\text{table}}$, so it can be said that there is no indication of heteroscedasticity in the regression model.

Table 4. Summary of Heteroscedasticity Test Results (First Hypothesis)

Line Tested	t_{value}	t_{table}	Conclusion	Description
X_1 against $ \varepsilon $	-0,672	2,040	H_0 accepted	No heteroscedasticity

After all classical assumptions were deemed valid, a two-tailed t-test was conducted to examine whether self-efficacy influenced students' mathematical problem-solving abilities. The results of the t-test calculation showed that the $t_{\text{value}} = 2,639$ and the $t_{\text{table}} = 2,040$. Since the $|t_{\text{value}}| \geq t_{\text{table}}$, H_0 was rejected, meaning that self-efficacy does influence students' mathematical problem-solving ability.

Furthermore, the results of the coefficient of determination test showed that $R^2 = 0.183$. This indicates that 18.3% of the variation in students' mathematical problem-solving ability can be explained by the self-efficacy variable. The remaining 81.7% is influenced by factors other than the independent variable being studied.

Testing the Second Hypothesis

At this stage, a simple linear regression analysis was conducted and tested using a t-test to determine the effect of the learning independence variable (X_2) on mathematical problem-solving ability (Y). Based on the analysis, the form of the simple linear regression equation obtained was:

$$\hat{Y} = 37,325 + 0,223X_2$$

In this equation, the constant value of 37.325 indicates that if learning independence is zero, then mathematical problem-solving ability is estimated to be 37.325. The regression coefficient for learning independence (X_2) of 0.223 indicates that each one-unit increase in learning independence will increase mathematical problem-solving ability by 0.223 units.

Next, classical assumption tests were conducted, consisting of residual normality tests, linearity tests, and heteroscedasticity tests. The normality test was conducted to identify whether the residual data had a normal distribution pattern or not, using the Liliefors method. The test criterion was that if $L_{\text{value}} < L_{\text{table}}$, then H_0 was accepted, meaning the regression model was normally distributed. Referring to Table 5, it is found that the value of $L_{\text{value}} = 0,125$. Meanwhile, at $\alpha = 5\%$ and $n = 33$, the value of $L_{\text{table}} = 0,154$ is obtained. Because $L_{\text{value}} < L_{\text{table}}$, H_0 is accepted, meaning that the regression model is normally distributed..

Table 5. Summary of Residual Normality Test Results (Second Hypothesis)

L_{value}	L_{table}	Conclusion	Description
0,125	0,154	$L_{\text{value}} < L_{\text{table}}$ (H_0 accepted)	Normally Distributed

The linearity test is intended to identify whether the relationship between the independent and dependent variables forms a linear pattern. The test criterion is that if the $F_{\text{value}} < F_{\text{table}}$, then H_0 is accepted, meaning the regression model is linear. Table 6 summarizes the linearity test calculations. Referring to the table, it can be seen that the variables under study have $F_{\text{value}} < F_{\text{table}}$, so it can be concluded that the regression model is linear.

Table 6. Summary of Linearity Test Results (Second Hypothesis)

Line Tested	F_{value}	F_{table}	Conclusion	Description
X_2 against Y	0,570	2,555	$F_{\text{value}} < F_{\text{table}}$ (H_0 accepted)	Linear

The test for heteroscedasticity aims to detect whether there are differences in the variance of errors in each prediction in the regression model. In this study, the Glejser test was used, with the criterion that if $|t_{\text{value}}| < t_{\text{table}}$, then H_0 is accepted, meaning that the regression model does not exhibit heteroscedasticity. Referring to Table 7, it is shown that the variables studied have $|t_{\text{value}}| < t_{\text{table}}$, so it can be said that there is no indication of heteroscedasticity in the regression model.

Table 7. Summary of Heteroscedasticity Test Results (Second Hypothesis)

Line Tested	t_{value}	t_{table}	Conclusion	Description
X_2 against $ \varepsilon $	-0,079	2,040	H_0 accepted	No heteroscedasticity

After all classical assumptions were deemed valid, a two-tailed t-test was conducted to examine whether independent learning affects students' mathematical problem-solving abilities. The results of the t-test calculation show that the $t_{\text{value}} = 0,969$ and the $t_{\text{table}} = 2,040$. Since the $|t_{\text{value}}| < t_{\text{table}}$, H_0 is accepted, meaning that independent learning does not affect students' mathematical problem-solving ability.

Furthermore, the results of the coefficient of determination test show that $R^2 = 0.029$. This indicates that only 2.9% of the variation in students' mathematical problem-solving ability can be explained by the variable of learning independence. The remaining 97.1% is influenced by other factors outside the independent variables studied.

Testing the Third Hypothesis

At this stage, multiple linear regression analysis was conducted and tested using the F-test to determine the effect of the variables of self-efficacy (X_1) and learning independence (X_2) on mathematical problem-solving ability (Y). Based on the analysis, the multiple linear regression equation obtained is:

$$\hat{Y} = 8,204 + 1,070X_1 - 0,497X_2$$

In this equation, the constant value of 8.204 indicates that if self-efficacy and learning independence are zero, then mathematical problem-solving ability is estimated to be 8.204. The regression coefficient for self-efficacy (X_1) of 1.070 indicates that each one-unit increase in self-efficacy will increase mathematical problem-solving ability by 1.070 units, assuming all other variables remain constant. Meanwhile, the regression coefficient for learning independence (X_2), which is -0.497, indicates that each one-unit increase in learning independence will decrease problem-solving ability by 0.497 units. This equation provides an overview of the direction and magnitude of the influence of each independent variable on the dependent variable.

Next, classical assumption testing was conducted, consisting of residual normality testing, linearity testing, multicollinearity testing, and heteroscedasticity testing. The normality test was conducted to identify whether the residual data had a normal distribution pattern or not, using the Liliefors method. The test criterion was that if $L_{\text{value}} < L_{\text{table}}$, then H_0 was accepted, meaning that the regression model was normally distributed. Referring to Table 8, it is found that the value of $L_{\text{value}} = 0,103$. Meanwhile, at $\alpha = 5\%$ and $n = 33$, the value of $L_{\text{table}} = 0,154$ is obtained. Because $L_{\text{value}} < L_{\text{table}}$, H_0 is accepted, meaning that the regression model is normally distributed.

Table 8. Summary of Residual Normality Test Results (Third Hypothesis)

L_{value}	L_{table}	Conclusion	Description
0,103	0,154	$L_{\text{value}} < L_{\text{table}}$ (H_0 accepted)	Normally distributed

The linearity test is intended to identify whether the relationship between the independent and dependent variables forms a linear pattern. The test criterion is that if $F_{\text{value}} < F_{\text{table}}$, then H_0 is accepted, or it can be said that the regression model is linear. Table 9 summarizes the linearity test

calculations. Referring to the table, it can be seen that each variable studied has a value of $F_{\text{value}} < F_{\text{table}}$, so it can be concluded that the regression model has a linear pattern.

Table 9. Summary of Linearity Test Results (Third Hypothesis)

Line Tested	F_{value}	F_{table}	Conclusion	Description
X_1 against Y	0,763	2,764	$F_{\text{value}} < F_{\text{table}}$ (H_0 accepted)	Linear
X_2 against Y	0,570	2,555		

The test for multicollinearity is intended to detect whether there is a high correlation between independent variables in a regression model. The existence of multicollinearity can be traced through an analysis of the Tolerance and Variance Inflation Factor (VIF) values. If the Tolerance value is > 0.10 and the VIF is < 10 , then the regression model shows no indication of multicollinearity. Based on Table 10, it can be seen that each independent variable has a Tolerance value > 0.10 and a VIF < 10 , so it can be interpreted that there is no indication of multicollinearity in this regression model.

Table 10. Summary of Multicollinearity Test Results (Third Hypothesis)

Line Tested	TOL	VIF	Conclusion	Description
X_2 against X_1	0,412	2,427	$TOL > 0,10$ and $VIF < 10$	No multicollinearity
X_1 against X_2	0,412	2,427		

The test for heteroskedasticity aims to detect whether there are differences in the variance of errors in each prediction in the regression model. In this study, the Glejser test was used, with the criterion that if $|t_{\text{value}}| < t_{\text{table}}$, then H_0 is accepted, meaning that the regression model does not exhibit heteroskedasticity. Referring to Table 11, it is shown that the variables studied have values of $|t_{\text{value}}| < t_{\text{table}}$, so H_0 is accepted, or it can be said that there is no indication of heteroscedasticity in the regression model.

Table 11. Summary of Heteroscedasticity Test Results (Third Hypothesis)

Line Tested	t_{value}	t_{table}	Conclusion	Description
X_1 against $ \varepsilon $	-0,800	2,040	H_0 accepted	No heteroscedasticity
X_2 against $ \varepsilon $	0,455	2,040		

After all classical assumptions were deemed valid, an F-test was conducted to determine the combined effect of self-efficacy (X_1) and learning independence (X_2) on mathematical problem-solving ability (Y). The F-test results showed that the $F_{\text{value}} = 4,818$ and the $F_{\text{table}} = 3,316$. Since $F_{\text{value}} > F_{\text{table}}$, H_0 is rejected, meaning that self-efficacy and learning independence together have a significant effect on students' mathematical problem-solving ability.

Furthermore, the results of the coefficient of determination test show that $R^2 = 0,243$. This indicates that 24.3% of the variation in students' mathematical problem-solving ability can be explained by the variables of self-efficacy and learning independence simultaneously. The remaining 75.7% is influenced by factors other than the independent variables studied.

Discussion

1. The Influence of Self-Efficacy on Mathematical Problem-Solving Ability

The findings of this study indicate that self-efficacy has a significant influence on the mathematical problem-solving ability of 10th grade TJKT students at SMK PGRI 2 Taman Pematang. This means that the stronger the self-efficacy possessed by students, the more confident they are in solving mathematical problems according to the indicators outlined by Polya in Afandi and Ningsih (2020), namely the ability to identify problems effectively, design solution strategies, implement those strategies, and review the results.

This finding aligns with the opinion of Syah et al. (2023), who state that self-efficacy is the belief held by scientists or academics in facing challenges related to their field of study. In line with this finding, the research described by Sa'adah et al. (2021) also indicates that self-efficacy has a significant effect on students' mathematical problem-solving abilities. Thus, this reinforces

that students' self-confidence in facing challenges plays a significant role as an important factor in determining success in solving mathematical problems.

However, despite its significant influence, self-efficacy contributes only 18.3% to mathematical problem-solving ability, indicating that the majority of variations in this ability are explained by other factors not examined in this study. These factors may include learning interest, learning motivation, learning strategies, learning styles, or even social support from the learning environment. Therefore, further research is recommended to expand the scope of variables, in order to build a more comprehensive and reflective predictive model of real-world conditions.

2. The Effect of Independent Learning on Mathematical Problem-Solving Ability

The findings of this study indicate that independent learning does not have a statistically significant effect on the mathematical problem-solving ability of 10th grade TJKT students at SMK PGRI 2 Taman Pemalang. This indicates that, in the context of this study, good learning independence does not necessarily guarantee that students can solve mathematical problems as indicated by Polya's problem-solving indicators in Afandi and Ningsih (2020), namely the ability to identify problems, design solution strategies, implement strategies, and review results. The very low coefficient of determination, only 2.9%, confirms that only a small portion of the variation in students' mathematical problem-solving abilities can be explained by learning independence. This indicates that learning independence is not the primary factor explaining such abilities in this study.

This finding needs to be examined further because it contradicts several theoretical views and previous research results. Theoretically, according to Lestari et al. (2020) and Septintiyas et al. (2022), independent learning is defined as an individual's capacity to learn autonomously without relying on the help of others. This should be an important asset in solving mathematical problems. In line with this theory, previous research by Salsabila et al. (2023) and Zulkarnain et al. (2023) also indicated a positive influence between learning independence and mathematical problem-solving ability. However, the findings in this study indicate that the influence of learning independence is not always the same in every situation, especially for vocational high school students majoring in TJKT.

One of the main factors suspected to be the cause of this insignificant influence is the characteristics of vocational high school students, particularly those in the TJKT program. Generally, vocational high school students are focused on mastering practical and procedural vocational skills, rather than developing higher-order cognitive abilities such as mathematical problem-solving. As explained by Mahande (2022), referring to Article 15 of Law Number 20 of 2003, vocational education is secondary education that prepares students to work in specific fields. As a result, SMK students' learning activities are more directed toward following instructions and technical exercises, leading them to become dependent on teachers in their learning, which ultimately hinders the optimal development of independent learning. When students become accustomed to structured and guided learning, their ability to solve mathematical problems independently becomes limited.

In addition, limitations in measurement instruments should also be considered. This study uses a questionnaire as the main tool to measure the level of students' independent learning. Although clear instructions were given for students to answer honestly and according to the actual conditions, it is possible that they answered the questions dishonestly (carelessly), so in this case, the validity of the data remains vulnerable to the subjectivity of the respondents. This is in line with the opinion of Widodo et al. (2023), who stated that one of the weaknesses of questionnaires is that the answers are not necessarily 100% valid because respondents may not answer honestly and may give random answers.

Therefore, for future research, it is recommended to pay more attention to the context and characteristics of vocational school students in a more specific manner, and not only use questionnaires to measure students' learning independence, but also complement them with other methods such as observation or interviews, so that the data obtained is more comprehensive and can accurately reflect the actual conditions of students' learning independence.

3. The Simultaneous Influence of Self-Efficacy and Learning Independence on Mathematical Problem-Solving Ability

The findings of this study indicate that self-efficacy and learning independence simultaneously have a significant influence on the mathematical problem-solving ability of 10th grade TJKT students at SMK PGRI 2 Taman Pemalang. These two variables together explain 24.3% of the variation in mathematical problem-solving ability, while the remainder is influenced by other factors not examined in this study. These results align with the findings of Zulkarnain et al. (2023), who also found that self-efficacy and learning independence simultaneously contribute to students' mathematical problem-solving ability.

However, when viewed from the direction of the regression coefficient, the self-efficacy variable shows a positive coefficient direction, while the learning independence variable shows a negative coefficient direction. The positive coefficient direction of the self-efficacy variable indicates that students who are confident in their own abilities tend to be more capable of solving mathematical problems. This is evident in their involvement in the problem-solving process according to the indicators proposed by Polya in Afandi and Ningsih (2020), namely being able to identify problems well, design a solid solution strategy, implement the strategy without hesitation, and evaluate the results obtained. Thus, students with high self-efficacy will find it easier to solve mathematical problems. Other studies, such as those conducted by Sa'adah et al. (2021) and Zulkarnain et al. (2023), also found a positive influence of self-efficacy on mathematical problem-solving ability.

Interestingly, when analyzed simultaneously, learning independence showed a negative regression coefficient. However, in separate analysis (simple regression), this variable did not have a significant effect. This indicates that in the context of this study, good learning independence does not necessarily guarantee that students can solve mathematical problems as indicated by Polya's problem-solving indicators in Afandi and Ningsih (2020), namely being able to identify problems, design solution strategies, implement strategies, and review results. As explained in the second hypothesis, this is suspected to occur due to the characteristics of SMK students majoring in TJKT, who tend to be accustomed to technical-procedural learning and following teacher instructions. Thus, when the teaching and learning process has become accustomed to following the teacher's instructions, students prefer to learn independently without asking questions or discussing with others, which can hinder them in solving mathematical problems. This condition differs from students who have high self-efficacy but also know when to seek help or collaborate with others, making it easier for them to solve mathematical problems. This is supported by Cao (2024), who states that collaborative interaction in mathematics learning can trigger deeper cognitive engagement and more effective problem-solving strategies.

Thus, although learning independence does not have a significant partial effect, strong self-efficacy acts as a dominant factor that can activate the potential contribution of learning independence. This shows that the synergy between self-confidence and independence continues to contribute simultaneously to students' mathematical problem-solving abilities.

CONCLUSION

Based on the results of the study conducted on 10th grade TJKT students at SMK PGRI 2 Taman, the following conclusions were drawn: (1) self-efficacy has a significant effect on students' mathematical problem-solving abilities, with a contribution of 18.3%; (2) learning independence does not significantly influence students' mathematical problem-solving ability; and (3) self-efficacy and learning independence together significantly influence students' mathematical problem-solving ability, with a contribution of 24.3%.

The results of this study are expected to serve as a reference for understanding the importance of internal factors, particularly self-efficacy, in the mathematics learning process, especially at the vocational education level. For future researchers, it is recommended to investigate the influence of other variables such as learning interest, learning motivation, learning strategies, or environmental support to gain a more comprehensive understanding. In addition, before conducting research, it is recommended to pay more attention to the characteristics/conditions of the subjects to be studied.

Develop test questions that can measure mathematical problem-solving abilities and relate them to the subject matter being studied. Additionally, use more diverse data collection methods (e.g., observation or interviews) to ensure that the research results are more comprehensive and representative.

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Authorship Contribution Statement

Nur Afifah: Conceptualization, design, statistical analysis, data analysis/interpretation, drafting manuscript.

Ahmadi: Critical revision of manuscript supervision, technical or material support, final approval.

Isnani: Critical revision of manuscript, supervision, technical or material support, final approval.

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