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The Relationship among Self-Efficacy, Mathematical Concepts Understanding, Creative Thinking Skills, Mathematical Problem-Solving Skills, and Mathematics Learning Outcomes

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Abstract. The proficiency of students in mathematical problem-solving skills is believed to be shaped by factors such as mathematical concepts understanding, creative thinking skills, and self-efficacy. This research endeavors to investigate the interplay among self-efficacy, mathematical concepts understanding, creative thinking skills, problem-solving skills, and mathematics learning outcomes. Employing a survey approach, the study encompasses all ninth-grade students in Central Bengkulu, Bengkulu, Indonesia, with a sample of 100 students selected through proportional stratified random sampling. Data collection involves Likert scale instruments for self-efficacy, along with tests for mathematical concepts understanding, creative thinking skills, and problem-solving skills. Path analysis techniques are applied for data analysis. The findings of the research indicate that mathematical concepts understanding, creative thinking skills, and problem-solving skills collectively exert a positive influence on mathematics learning outcomes. Additionally, it is demonstrated that self-efficacy, understanding mathematical concepts, and creative thinking skills collectively contribute positively to problem-solving skills. Furthermore, the research reveals a direct positive influence of self-efficacy on both mathematical concepts understanding and creative thinking skills.

Keywords: Creative Thinking Skills; Mathematical Concepts Understanding; Mathematics Learning Outcomes; Problem-Solving Skills; Self-Efficacy

Abstrak. Kemahiran siswa dalam keterampilan pemecahan masalah matematis diyakini dipengaruhi oleh berbagai faktor seperti pemahaman konsep matematika, kemampuan berpikir kreatif, dan efikasi diri. Penelitian ini berupaya untuk menyelidiki pengaruh antara efikasi diri, pemahaman konsep matematika, keterampilan berpikir kreatif, keterampilan pemecahan masalah, dan hasil belajar matematika. Dengan menggunakan pendekatan survei, penelitian ini mencakup seluruh siswa kelas sembilan di Bengkulu Tengah, Bengkulu, Indonesia, dengan sampel 100 siswa yang dipilih melalui proporsional stratified random sampling. Pengumpulan data menggunakan instrumen skala Likert untuk efikasi diri, disertai tes pemahaman konsep matematika, tes kemampuan berpikir kreatif, dan tes kemampuan pemecahan masalah. Teknik analisis jalur diterapkan untuk analisis data. Temuan penelitian menunjukkan bahwa pemahaman konsep matematika, kemampuan berpikir kreatif, dan kemampuan pemecahan masalah secara bersama-sama memberikan pengaruh positif terhadap hasil belajar matematika. Selain itu, terbukti bahwa efikasi diri, pemahaman konsep matematika, dan keterampilan berpikir kreatif secara kolektif berkontribusi positif terhadap keterampilan pemecahan masalah. Lebih lanjut, penelitian ini mengungkapkan adanya pengaruh positif langsung dari efikasi diri terhadap pemahaman konsep matematika dan keterampilan berpikir kreatif.

Kata Kunci: Hasil Belajar Matematika; Keterampilan Berpikir Kreatif; Keterampilan Pemecahan Masalah; Pemahaman Konsep Matematika; Self-Efficacy

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INTRODUCTION

Learning problem-solving skills is an important tool in creating quality people as problem-solvers. That is one of the goals of mathematics education. In the process, mathematics education requires creativity and self-confidence. Also, students need to have a good understanding of mathematical concepts (Widada & Herawaty, 2022). Students can learn it through electronic school books for junior high school mathematics (Fleming, 2005). In managing learning about solving mathematical problems, professional educators are needed (Harsono, 2015).

Initial research results show the fact that the problem-solving abilities of junior high school students in Central Bengkulu Regency are low. Students' difficulties in solving mathematical problems are a result of low ability to understand concepts and low student creativity. Students are often unsure of their abilities related to solving mathematical problems (Widada & Herawaty, 2022). It is this disappointment felt by students that causes a student's low self-efficacy (Sahara et al., 2017) in studying mathematics (Inayah, 2016). Due to the low state of self-efficacy, students feel that they are not compelled to improve their concept comprehension skills, and develop creative thinking skills and problem-solving abilities, and ultimately has implications for low mathematics learning outcomes (Arrahim, Sugiharti, & Damayanti, 2020).

Bandura states that self-efficacy is an individual's belief that he can master the situation and obtain positive results (Abdolvahabi, Bagheri, Haghighi, & Karimi, 2012). Self-efficacy contributes to students' mathematics learning achievement in junior high schools (Ramchunder & Martins, 2014). In addition, the ability to think creatively also had an influence of 40.97 on learning achievement (Tiong & Bakar, 2022). The ability to think creatively is a combination of logical thinking and divergent thinking based on intuition in consciousness (Nugroho, Nizaruddin, Dwijayanti, & Tristianti, 2020). Logical thinking is a way of thinking that conforms to the rules of logic, while divergent thinking means providing various possible answers to the same question (Khoiriyah & Husamah, 2018). The achievement of learning mathematics is referred to by the researcher, which the author interprets as the result of learning mathematics. The results of learning mathematics are the abilities possessed by students after receiving the experience of learning mathematics. Those changes include changes in cognitive, affective, and psychomotor abilities.

Mathematics learning outcomes are also influenced by problem-solving ability (Pambudi, Budayasa, & Lukito, 2020; Hasanah, Tafrilyanto, & Aini, 2019; Tisngati & Genarsih, 2021) other studies show that problem-solving ability influences mathematics learning outcomes (Lestari, 2019; Pambudi et al., 2020) Problem-solving is a process of applying previously acquired knowledge into new, unfamiliar situations (Freeman-Green, O'Brien, Wood, & Hitt, 2015). In addition, the results showed that problem-solving ability is influenced by the ability to understand concepts (Yu, Fan, & Lin, 2015). The ability to understand concepts is to understand something, the ability to understand, to transform information into a meaningful form.

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The results of the above studies show that self-efficacy and problem-solving ability have a positive effect on mathematics learning outcomes(Afifi, Shehata, & Mahrousabdalaziz, 2016). The ability to understand concepts and think creatively also positively affects problem-solving skills. Research on the influence of self-efficacy, concept comprehension ability, and creative thinking ability on problem-solving ability and its impact on mathematics learning outcomes is not yet known (Sahara et al., 2017). This influence is very important to know to maximize the teacher's efforts in managing self-efficacy, concept understanding ability, creative thinking ability, and problem-solving ability to improve mathematics learning outcomes (Hashemi, Kimiaie, & Hashemizadeh, 2014).

The success achieved can increase a person's self-efficacy, while failure will reduce their self-efficacy (Sahara et al., 2017; Bandura, 1989; Bandura, 1998). If a person's success is due to factors outside themselves, it usually will not have an impact on increasing self-efficacy. However, if this success is achieved through great obstacles and is the result of one's struggle, then this will influence increasing one's self-efficacy.

Furthermore, vicarious experiences that are similar to individuals in carrying out a task will usually increase a person's self-efficacy in carrying out the same task (Bandura, 1989; Bandura, 1998). This self-efficacy is obtained through social modeling which usually occurs in someone who lacks knowledge about their abilities, thus encouraging someone to do modeling. However, the self-efficacy obtained will not be very influential if the observed model is not similar or different from the model (Bandura, 1989; Bandura, 1998). Information about abilities conveyed verbally by someone influential is usually used to convince someone that he or she is capable enough to perform a task. Anxiety and stress that occur within a person when carrying out a task are often interpreted as failure. In general, a person tends to expect success in conditions that are not characterized by tension and does not feel any complaints or other somatic disorders. Self-efficacy is usually characterized by low levels of stress and anxiety, whereas low self-efficacy is characterized by high levels of stress and anxiety.

Understanding concepts provides basic benefits for students themselves, including improving memory, improving mathematical solving abilities, building their understanding, and improving attitudes and self-confidence (Widada, Herawaty, Andriyani, Marantika, & Yanti, 2020). Based on these benefits, it is clear that students' ability to understand concepts in mathematics plays an important role in solving mathematical problems (Fensel, 1997). This happens because by understanding the correct concept, students can absorb, master, and store the concept for a long period and can be recalled when needed to learn higher mathematical concepts (Surya, Syahputra, Yuniza Eviyanti, & Simbolon, 2017). So understanding of concepts needs to be improved to improve a student's mathematics learning outcomes because studying mathematics requires an understanding of the interrelationships between mathematical concepts.

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Creative thinking is an idea-construction process that emphasizes aspects of fluency, flexibility, novelty, and detail (Feldhusen & Treffinger, 1985). Creative thinking is thinking that leads to gaining new insights, new approaches, new perspectives, or new ways of understanding something. In general, creative thinking is triggered by challenging problems. Creative thinking can be interpreted as a combination of logical thinking and divergent thinking (Pappas & Pappas, 2003). Logical thinking is a way of thinking that is by the rules of the science of logic. Meanwhile, divergent thinking means providing various possible answers to the same question. Creative thinking is a thinking process that produces various possible answers (Türkmen, 2015). In problem-solving, if you apply creative thinking, you will produce many ideas that are useful in finding solutions to problems.

Problem-solving ability consists of the ability to understand problems which is a form of human activity, this activity requires problem-solving strategies in the form of understanding the problem, completing models, and interpreting solutions (Polya, 1981; Polya, 1973). The focus of this research examines problem-solving abilities which include the ability to understand problems, solve problems, and interpret solutions.

Based on the description above, we explore the influence of causality between variables. This is the influence of the ability to understand concepts, the ability to think creatively, and self-efficacy on problem solving abilities. Also, the influence of self-efficacy on the ability to understand concepts; and self-efficacy towards creative thinking abilities.

METHOD

This type of research belongs to descriptive and verifiable types of research because it is used to trace the influence of causality between variables. In collecting data, survey research methods are used with a quantitative approach.

The population is all state junior high school students in Central Bengkulu Regency, Bengkulu Province. That's 31 schools. The total enrolled population is 4884 students. Sampling was carried out using a proportional stratified random sampling technique. The sample size for this study was 100.

There are five research instruments, namely the Self-Efficacy Questionnaire, Concept Comprehension Ability Test, Creative Thinking Ability Test, Problem Solving Ability Test, and Mathematics Learning Outcomes Test. The indicators for the three instruments can be presented in Table 1.

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Tabel 1. Latent Variables and Measurable Variables

Latent Variables	Indicators	Sample of Item
Self-Efficacy (ξ_1)	X_1: Mastery Experiences	The difficulties I have experienced in obtaining successful tasks, make me even more challenged to achieve more. (with Likert Scale)
	X_2: vicarious experiences	Appreciation for the achievements that have been achieved by others, encourages me to be more diligent in learning. (with Likert Scale)
	X_3: Social Persuation	The selection of class champions encouraged me to study more diligently. (with Likert Scale)
	X_4: physiological and emotional states	The feeling of fear and shame if wrong made me less courageous to try to complete a math assignment in front of the class. (with Likert Scale)
Concept Comprehension Ability (η_1)	Y_1: the ability to give examples and not examples of concepts.	Give examples of opportunities in everyday life.
	Y_2: the ability to present concepts in various forms of mathematical representation.	At the throwing of two dice, the incidence of 5 dice faces is...
	Y_3: the ability to use, utilize, and select specific procedures or operations.	S = {natural number less than 10} and A = {y | y is a prime number, y∈S} The probability of occurrence A is...
	Y_4: the ability to apply concepts or algorithms to problem-solving.	Suppose the probability of an event is, the meaning of the number $\frac{1}{3}$ be...
Creative Thinking Ability (η_2)	Y_5: Smooth	In an experiment to cast lots of three similar coins simultaneously once, the possible sample point is . . .
	Y_6: Flexibility	Name experiments for which many members of the sample space are 16.
	Y_7: novelty	The diagram shows the road that can be traveled by vehicles moving from city A to city G through cities B, C, D, E, and F
	Y_8: details	If Bob has 3 jeans in Black (H), Blue (B), and Gray (A). and has 3 T-shirts in Yellow (K), Red (M), and Purple (U). Make a choice of fitting jeans and T-shirts?
Problem-solving Ability (η_3)	Y_9: understanding the problem.	Given 3 coins thrown simultaneously. What is the chance of at least two numbers appearing on the throw of the 3 currencies. What is known and what is asked?
	Y_{10}: problem solving.	Based on what is discussed and asked, how and how to solve it?
	Y_{11}: interpretation of the solution.	What is the conclusion about the answer to the above problem?
Student Learning Outcomes (η_4)	Y_{12}: cognitive abilities	Discuss the meaning of sample space, and the sample point of an experiment.
	Y_{13}: affective ability	Discuss to determine the sample space of an experiment by recording its sample points
	Y_{14}: psychomotor abilities	Determine the odds of each sample point in the sample space of an experiment.

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The data were analyzed using path analysis techniques, which were previously tested for analysis requirements in the form of an estimated error normality test and an estimated error linearity test.

RESULTS AND DISCUSSION

There are four structural equations resulting from this study. It is a causal relationship between an exogenous variable and an endogenous variable. The four sub-structural equations are:

$$\eta_4 = \gamma_{41}\xi_1 + \beta_{41}\eta_1 + \beta_{42}\eta_2 + \beta_{43}\eta_3 + \zeta_4$$

$$\eta_3 = \gamma_{31}\xi_1 + \beta_{31}\eta_1 + \beta_{32}\eta_2 + \zeta_3$$

$$\eta_2 = \gamma_{21}\xi_1 + \zeta_2$$

$$\eta_1 = \gamma_{11}\xi_1 + \zeta_1$$

An explanation of the four substructure equations can be seen in Figure 1-4.

Substructure Equation 1

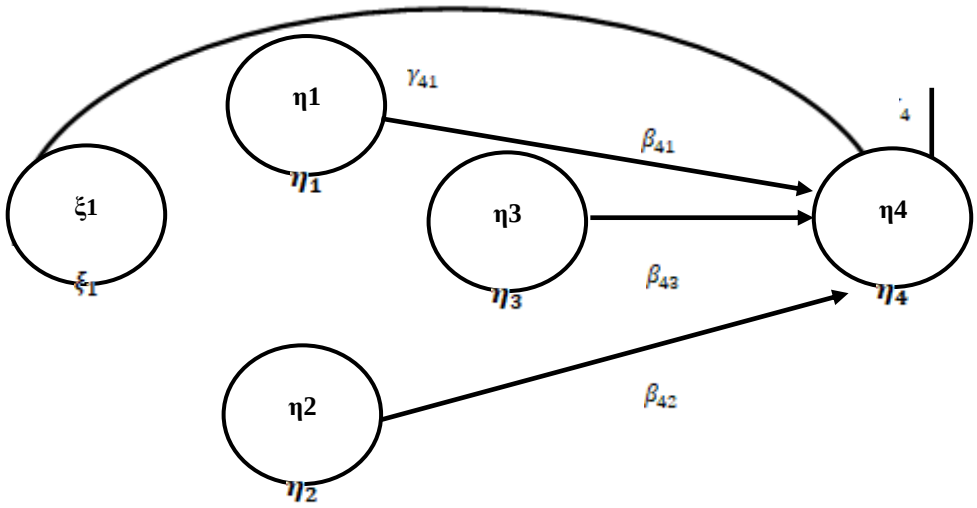

Figure 1. Substructure 1 Causal relationship $(\eta_1)(\eta_2)(\eta_3)$ to (η_4)

The statistical hypothesis for substructure 1is formulated as follows:

H_0: $\beta_{41} = \beta_{42} = \beta_{43} = 0$

The ability to understand concepts, and the ability to think creatively and the ability to solve problems together do not have a direct positive effect on mathematics learning outcomes.

Ha: $\beta_{41} = \beta_{42} = \beta_{43} \neq 0$

The ability to understand concepts, and the ability to think creatively, and the ability to solve problems together have a direct positive effect on mathematics learning outcomes.

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Substructure Equation 2

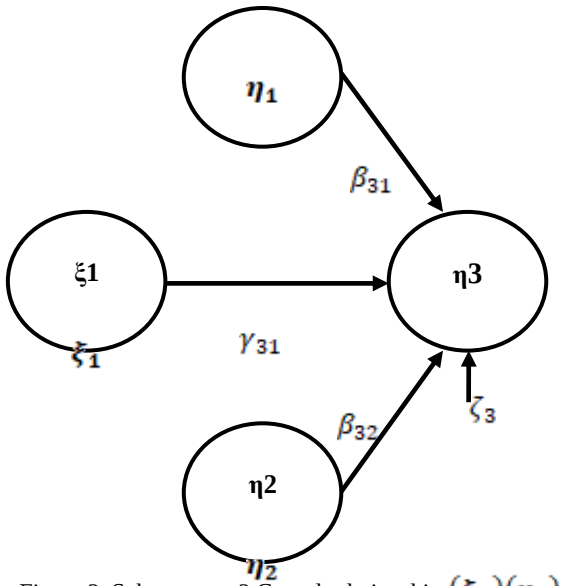

Figure 2. Substructure 2 Causal relationship $(\xi_1)(\eta_1)(\eta_2)$ to (η_3)

The statistical hypothesis of substructure 2 is formulated as follows:

H0: $\gamma_{31} = \beta_{31} = \beta_{32} = 0$

Self-efficacy, The ability to understand concepts, and the ability to think creatively together does not have a direct positive effect on problem-solving abilities.

Ha: $\gamma_{31} = \beta_{31} = \beta_{32} \neq 0$

Self-efficacy, The ability to understand concepts, and the ability to think creatively together have a direct positive effect on problem-solving abilities.

Substructure Equation 3

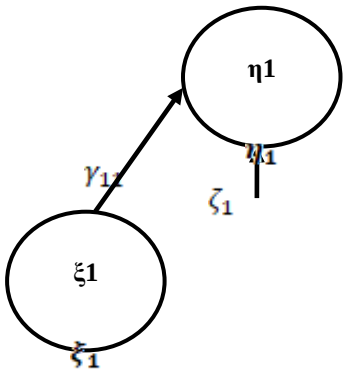

Figure 3. Substructure 3 Causal relationship (ξ_1) to (η_1)

The statistical hypothesis of substructure 3 is formulated as follows:

H_0: $\gamma_{11} = 0$

Self-efficacy does not have a direct positive effect on the ability to understand concepts.

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H_a: $\gamma_{11} \neq 0$

Self-efficacy has a direct positive influence on the ability to understand concepts.

Substructure Equation 4

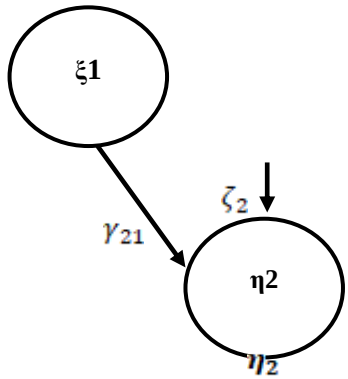

Figure 4. Substructure 4 Causal relationship (ξ_1) to (η_2)

The statistical hypothesis of substructure 4 is formulated as follows:

H_0: $\gamma_{21} = 0$

Self-efficacy does not have a direct positive effect on the ability to think creatively.

Ha: $\gamma_{21} \neq 0$

Self-efficacy has a direct positive effect on the ability to think creatively.

Model and Hypothesis Testing

From the model can be made four equations, and which are structural equations because each equation explains the causal relationship, that is the exogenous variable to the endogenous variable. Hypothesis testing of substructure 1 with structural equations

$$\eta_4 = \gamma_{41}\xi_1 + \beta_{41}\eta_1 + \beta_{42}\eta_2 + \beta_{43}\eta_3 + \zeta_4$$

The explanation of all latent variables:

ξ_1 = Self-efficacy

η_1 = Ability to Understand Concepts

η_2 = Ability to Think Creatively

η_3 = Problem Solving Ability

η_4 = Mathematics Learning Outcomes

The result of the calculation is obtained a value with a probability value. It is obtained the path equation:

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$$F_{hitung} = 515{,}249(sig.) = 0{,}000[(sig.) = 0{,}000.] < [\alpha = 0{,}05]\ \eta_4 = \gamma_{41}\xi_1 + \beta_{41}\eta_1 + \beta_{42}\eta_2 + \beta_{43}\eta_3 + \zeta_4 = 0{,}437\xi_1 + 0{,}337\ \eta_1 + 0.159\eta_2 + 0.056\ \eta_3 + 0{,}230.$$

Testing of substructure hypothesis with structural equations:

$$\eta_3 = \gamma_{31}\xi_1 + \beta_{31}\eta_1 + \beta_{32}\eta_2 + \zeta_3.$$

The result of the calculation is obtained a value with a probability value. Because, with the path coefficient.

$$F_{hitung} = 423{,}361\ (sig.) = 0{,}000[(sig.) = 0{,}000.] < [\alpha = 0{,}05]\eta_3 = \gamma_{31}\xi_1 + \beta_{31}\eta_1 + \beta_{32}\eta_2 + \zeta_3 = 0{,}367\xi_1 + 0.392\eta_1 + 0.212\ \eta_2 + 0{,}290$$

Testing of substructure hypothesis with structural equations $\eta_2 = \gamma_{11}\xi_1 + \zeta_1$. The result of the calculation is obtained a value with a probability value Due to, with the path coefficient:

$$F_{hitung} = \ 1{,}579x10^3(sig.) = 0{,}000.[(sig.) = 0{,}000.] < [\alpha = 0{,}05]\eta_1 = \gamma_{11}\xi_1 + \zeta_1 = 0{,}965\xi_1 + 0{,}265.$$

Testing of substructure hypothesis with structural equations $\eta_2 = \gamma_{21}\xi_1 + \zeta_2$. The result of the calculation is obtained a value with a probability value Due to , with the path coefficient:

$$F_{hitung} = 1{,}062\ x\ 10^3(sig.) = 0{,}000.\ [(sig.) = 0{,}000.] < [\alpha = 0{,}05]$$

$$\eta_2 = \gamma_{21}\xi_1 + \zeta_2 = 0{,}949\xi_1 + 0{,}316.$$

Based on sub-structure tests 1 to 4, a complete path coefficient summary can be made in Figure 5.

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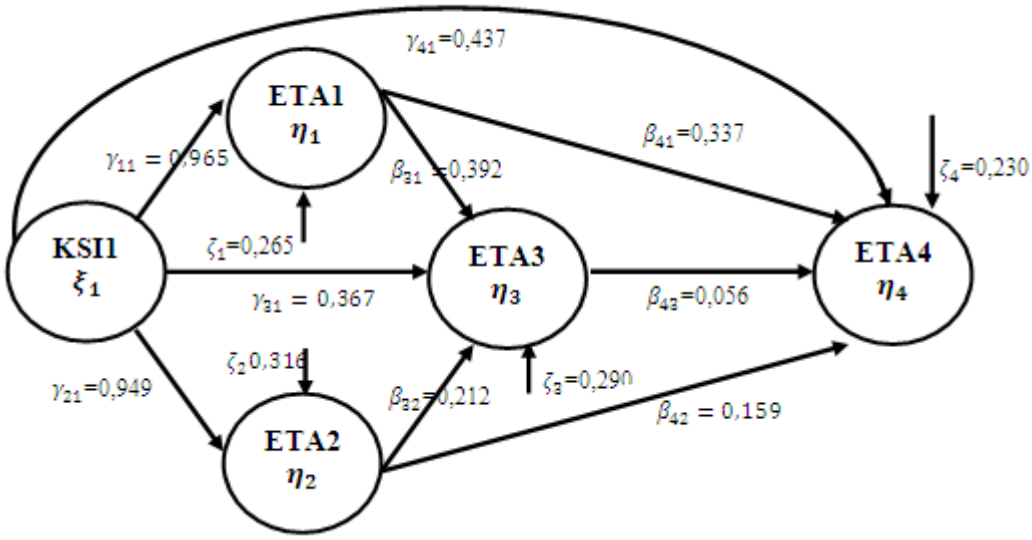

Figure 5. Complete Empirical Path Diagram

Based on Figure 5, that self-efficacy (has a direct positive influence on the ability to understand concepts (by 0.965; on the ability to think creatively by 0.949; on problem-solving ability (by 0.367; and on mathematics learning outcomes by 0.437. The ability to understand concepts (has a direct influence on problem-solving ability (by 0.392; and on the results of learning mathematics () by 0.337. The ability to think creatively (has a direct positive influence on problem-solving ability (by 0.212; and on the results of learning mathematics (by 0.159.

Based on Figure 1, that self-efficacy (has a positive indirect influence on problem-solving ability (through the ability to understand concepts (by 0.378; and through the ability to think creatively (by 0.201. The ability to understand concepts (has a positive indirect influence on the results of learning mathematics through problem solving ability (amounting to 0.022. The ability to think creatively (has a positive direct influence on the results of learning mathematics through problem-solving ability (amounting to 0.012. Self-efficacy (has a positive indirect influence on mathematics learning outcomes (through the ability to understand concepts (by 0.325; through the ability to think creatively (by 0.151; through the ability to understand concepts (and the ability to think creatively by 0.021; through the ability to think creatively (and the ability to solve problems).

The ability to understand concepts has a direct positive effect on the results of learning mathematics indicated by the path coefficient of equal to the value at the real level. That is, there is a strong positive direct influence. The results of this study have shown that the higher the student's ability to understand mathematical concepts, the higher the success rate in learning mathematics. Because concepts in mathematics have a clear structure and interrelationships. By understanding the correct concept,$\beta_{41} = 0{,}337[t_{hitung} = 3{,}606] > [t_{tabel} = 1{,}980]\alpha = 0{,}05$students can absorb, master and store the concept for a long period of time and can be recalled when necessary in

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learning higher mathematical concepts (Mukarromah, 2012). Therefore, a student needs to have the ability to understand concepts to be able to improve mathematics learning outcomes.

The ability to think creatively also has a direct positive effect on the results of learning mathematics indicated by the path coefficient of equal to the value at a real level. That is, there is a positive direct influence whose strength is moderate. The results of this study show that the higher the creative thinking ability possessed by a student, the higher the success rate in learning mathematics. Because problems in mathematics can be in the form of realistic problems or abstract problems. Those problems are not problems that can only be solved in one way, but can be solved in many ways, methods, and approaches and allow various solutions to be obtained. Therefore, it is clear that to be able to solve a problem in mathematics, it is very necessary to have the creative thinking skills of each student. By thinking creatively, students are able to combine

$$\beta_{42} = 0{,}159\left[t_{hitung} = 2{,}098\right] > \left[t_{tabel} = 1{,}981\right]\alpha = 0{,}05$$

Logical thinking and divergent thinking (Zetriuslita, Wahyudin, & Dahlan, 2018)(Wulandary, et al., 2021). By using logical and divergent thinking, students can think in accordance with the rules of logic to produce various solutions in solving mathematical problems, which in the end can improve the student's mathematics learning outcomes.

The effect of problem-solving ability on mathematics learning outcomes of junior high school students in Bengkulu Tengah Regency can be statistically proven with a path coefficient of magnitude at a real level. That is, there is a weak positive direct influence. These findings show that the higher the problem-solving ability possessed by students, the higher the success in learning mathematics.

$$\beta_{43} = 0{,}056\left[t_{hitung} = 2{,}052\right] > \left[t_{tabel} = 1{,}980\right]\alpha = 0{,}05$$

The results of this study show that the higher the problem-solving ability possessed by a student, the higher the success rate in learning mathematics. The process of solving problems, it provides opportunities for students to play an active role in studying, searching, and finding information for themselves to be processed into a concept, as well as understanding and applying that concept to various situations. In addition, the ability to think creatively is also needed in every stage of problem-solving starting from understanding the problem, solving the problem, and interpreting the solution of the problem (Huda, Mulyono, & Rosyida, 2019). Therefore, every student needs to have mastery of the ability to understand concepts and think creatively to be able to solve problems and succeed in learning mathematics.

Self-efficacy has a direct positive effect on mathematics learning outcomes indicated by a path coefficient of magnitude with a value at a real level. That is, there is a strong positive direct influence.

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$$\gamma_{41} = 0{,}437[t_{hitung} = 4{,}700] > [t_{tabel} = 1{,}980]\alpha = 0{,}05$$

The results of this study show that the higher the self-efficacy possessed by a student, the higher the success rate in learning mathematics This finding shows that the higher the self-efficacy possessed by students, the higher the desire to improve their ability to solve mathematical problems. This happens because self-efficacy affects how an individual thinks and acts, especially when students learn mathematics (Hashemi et al., 2014). The higher the self-efficacy possessed by students, the higher the choice of behavior, career, quantity, and quality of a student's efforts in learning mathematics and getting good mathematics learning results.

The path coefficient of concept comprehension ability has a strong influence on mathematics learning outcomes, while creative thinking ability and problem-solving ability have a moderate influence on mathematics learning outcomes (Khoiriyah & Husamah, 2018). This fact occurs because the level of concept understanding ability of junior high school students in Bengkulu Tengah Regency is higher than the management of creative thinking ability and problem-solving ability to increase the success of learning mathematics.

Self-efficacy has a direct positive effect on problem-solving ability indicated by a path coefficient of magnitude with a value at a real level. That is, there is a strong positive direct influence. These findings show that the higher the self-efficacy possessed by students, the higher their desire to improve their ability to solve mathematical problems (Salmaini, Fauzan, & Arnawa, 2021).

$$\gamma_{31} = 0{,}367[t_{hitung} = 3{,}295] > [t_{tabel} = 1{,}981]\alpha = 0{,}05$$

This happens because self-efficacy affects how an individual thinks and acts, especially when students learn mathematics(Afifi et al., 2016). The higher the self-efficacy possessed by students, the higher the choice of behavior, career, quantity, and quality of a student's efforts in solving mathematical problems.

The influence of concept understanding ability on the problem-solving ability of junior high school students in Bengkulu Tengah Regency can be statistically proven with a path coefficient of as large as at a real level. That is, there is a strong positive direct influence. This finding shows that the higher the ability to understand concepts owned by students, the higher the level of students' ability to solve mathematical problems.

$$\beta_{31} = 0{,}392[t_{hitung} = 3{,}526] > [t_{tabel} = 1{,}981]\alpha = 0{,}05$$

Meanwhile, the influence of creative thinking ability on the problem-solving ability of junior high school students in Bengkulu Tengah Regency can be statistically proven with a path coefficient of magnitude at a real level. That is, there is a positive direct influence whose strength is

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moderate. This finding shows that the higher the creative thinking ability possessed by students, the higher the level of students' ability to solve mathematical problems.

$$\beta_{32} = 0{,}212\left[t_{hitung} = 2{,}289\right] > \left[t_{tabel} = 1{,}981\right]\alpha = 0{,}05$$

The results of this study show that the higher the level of concept understanding ability and creative thinking ability possessed by a student, the higher the level of mathematical problem-solving ability. Because in the process of solving problems provides opportunities for students to play an active role in studying, searching, and finding information for themselves to be processed into a concept, as well as understanding and applying that concept to various situations(Herawaty et al., 2021). In understanding and applying that concept to problem solving, it takes creative thinking in which logical and divergent thinking is contained. This way of thinking must be developed through learning mathematics because mathematics has a strong and clear structure and interrelationships between its concepts, thus allowing students to be skilled in rational thinking. Therefore, every student needs to have mastery of the ability to understand concepts and think creatively to be able to solve mathematical problems.

The path coefficient of self-efficacy and the ability to understand concepts have a strong influence on problem-solving ability, while the ability to think creatively, has a moderate influence on problem-solving ability (Tiong & Bakar, 2022). This fact occurs because the level of self-efficacy and ability to understand the concept of opportunity for junior high school students in Bengkulu Tengah Regency is higher than the management of creative thinking skills in an effort to solve mathematical problems. Self-efficacy has a direct positive effect on the ability to understand concepts indicated by a path coefficient of magnitude with a value at a real level. That is, there is a strong positive direct influence. This finding shows that the higher the self-efficacy possessed by students, the higher the student's desire to improve their ability to understand mathematical concepts.

$$\gamma_{11} = 0{,}965\left[t_{hitung} = 39{,}741\right] > \left[t_{tabel} = 1{,}980\right]\alpha = 0{,}05$$

Self-efficacy also has a direct positive effect on the ability to think creatively indicated by the path coefficient of magnitude with a value at a real level. That is, there is a strong positive direct influence. These findings show that the higher the self-efficacy possessed by students, the higher their desire to improve their creative thinking skills. The self-efficacy path coefficient has a strong influence on conceptual comprehension ability and creative thinking ability (Widada & Herawaty, 2022; Widada & Herawaty, 2023; Sahara et al., 2017). This fact occurs because junior high school students have good management skills towards their self-efficacy to improve their ability to understand concepts and manage creative thinking skills.

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CONCLUSIONS

The conclusions of this research are (1) The ability to understand concepts, and the ability to think creatively, and the ability to solve problems together have a direct positive effect on mathematics learning outcomes. (2) Self-efficacy, the ability to understand concepts, and the ability to think creatively together have a direct positive effect on problem-solving abilities. (3) Self-efficacy has a direct positive influence on the ability to understand concepts. (4) Self-efficacy has a direct positive effect on the ability to think creatively. Therefore, it is suggested that to improve mathematics learning outcomes, it is necessary to increase self-efficacy, concept understanding, creative thinking ability, mathematical problem-solving ability.

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