ISET 10 (2024): 79-86 e-ISSN 2964-4291
International Conference on Science, Education and Technology http://proceeding.unnes.ac.id/ISET

Mathematical Problem-Solving Ability Reviewed From Self-Confidence in Challenge Based Learning with the Implementation of Math Treasure Hunt Activities

Erdita Aulia Syaharani*, Arief Agoestanto, Tri Sri Noor Asih

Magister of Mathematic Education, Universitas Negeri Semarang, Semarang, Indonesia

*Corresponding Author: erditaulia99@students.unnes.ac.id

Abstract. Mathematical problem-solving is a crucial ability that needs to be developed to prepare students to face the challenges of the 21st century. The ability can be improved by using learning activity, one of which is the implementing Math Treasure Hunt in Challenge-Based Learning Model. The aims of this research are (1) to analyze the quality of learning using the CBL model by implementing MTH activities on students' mathematical problem-solving abilities and (2) to analyze mathematical problem-solving abilities in terms of students' self-confidence in the CBL model with implementation of MTH activities. This research uses a mixed method with a sequential explanatory design. The sampling technique uses random sampling and determining research subjects uses purposive sampling technique. The samples were students in class 10C and 10D at SMA Semesta BBS Semarang 2023/2024. Meanwhile, the research subjects consisted of six students with high, medium and low self-confidence. Data collection techniques in this research used observation, questionnaires, tests and interviews. The results of the research show that (1) learning with a challenge based learning model with the implementation of math treasure hunt activities has a positive effect on students' mathematical problem solving abilities and (2) (a) subjects with high self-confidence fulfill all stages of mathematical problem-solving abilities; (b) subjects with moderate self-confidence fulfill the second and third stages and do not fulfill the other two stages; and (c) subjects with low self-confidence fulfill the second stage, do not fulfill the fourth stage, and do not fulfill both stages of mathematical problem solving ability.

Keywords: problem-solving, CBL, treasure hunt, self-confidence

INTRODUCTION

Problems in everyday life guide everyone to solve them consistently and successfully. In general, a problem is a question or difficulty that needs to be solved (Căprioară, 2015). In mathematics, problem solving abilities are important to develop in learning. The need for mathematical problem solving abilities is related to the essentiality of the development of science and technology in this competitive era of globalization (Khatimah & Sugiman, 2019). Minister of Education and Culture Regulation No. 21 of 2016 concerning Primary and Secondary Education Content Standards states that one of the competencies for learning mathematics is showing a logical, critical, analytical, careful and thorough attitude, being responsible, responsive, and not giving up easily in solving problems. By learning problem solving in mathematics, students gain ways of thinking, habits, persistence, curiosity, and self-confidence in unfamiliar conditions that they will face outside the mathematics classroom (NCTM, 2000). Mathematical problem solving is one of the abilities that needs to be developed to prepare students to face the challenges of the 21st century. The aim of 21st century skills is to understand, practice, and adapt methods to everyday life situations (Szabo et al., 2020). Problem solving is a real step in realizing and using mathematics intellectually(Căprioară, 2015). Problem solving is a key competency for facing 21st century challenges with their respective levels of complexity in various areas of life (Funke et al., 2018).

Students' mathematical problem solving abilities are the main point in this research that needs to be developed. Căprioară's Research (2015) revealed that students' ability to solve mathematical problems showed quite low results. Research conducted by Nuryana & Rosyana (2019) shows that students' mathematical problem solving abilities are still relatively low. According to research conducted by Hermawati et al. (2021), the average mathematical problem solving ability is categorized as low. Preliminary observations of students at school are one step in finding out factual conditions in the field. Based on the results of students' work on the Setting Up Equation to Solve Problems material in the Cambridge curriculum which was carried out at SMA Semesta Bilingual Boarding School Semarang for the 2022/2023 academic year, students' problem solving abilities are in the medium category which needs to be developed.

In solving a problem, a student needs to have self-confidence. Self-confidence is a positive attitude possessed by someone who believes he

has the ability to develop good values for himself and his environment (Capone et al., 2019). A student's level of self-confidence contributes to the student's problem solving abilities (Irhamna et al., 2020; Otacioğlu, 2008). There is an interaction between students' mathematical problem solving abilities to increase students' self-confidence (E. Surya et al., 2017). Problem solving was chosen as a stimulus for education because it can help students become more confident in their abilities in working on mathematical problems (Capone et al., 2019). In the field, students' doubts sometimes arise when facing problems, especially mathematics problems. When solving a math problem, students who are confident in their abilities tend to produce the correct answer. According to Furner & Berman (2005), students who feel more confident in their ability to do mathematics will bode well for them in all problem-solving decisions they may make in the future. The level of students' attitudes towards the tasks given is positive if they have high self-confidence to carry out the tasks requested (Moneva & Tribunalo, 2019). Children who do not have self-confidence will hinder the development of children's intellectual achievements, skills and independence (H. Surya, 2007). One of the competencies is having curiosity, enthusiasm for continuous learning, self-confidence, and interest in mathematics (Permendikbud, 2016). Good self-confidence in students will be able to actualize the potential that exists within a student (Tanjung & Amelia, 2017; Veronika et al., 2021). Students who have good self-confidence can develop a sense of confidence in solving the questions given (Purnama & Mertika, 2018).

Students' abilities in learning are not always influenced by the students' initial abilities and/or the material presented by the teacher, other influences include the way the teacher delivers learning material. Before implementing learning, teachers must organize learning so that students are able to achieve the expected competencies (Widyanto & Wahyuni, 2020). Teachers need to prepare lessons well, because even the lessons that have been prepared are sometimes unable to achieve the objectives and encounter problems. One of the problems in learning mathematics is the lack of mastery of appropriate learning methods and approaches to be used in each different class (Sari, 2019). This encourages teachers to innovate learning to improve their students' abilities, one of which is problem solving abilities. Problem solving abilities can be applied with the Math Treasure Hunt (MTH) activity which integrates the Challenge Based Learning (CBL) model. CBL learning is integrated from thinking processes that require problem solving abilities (Susilawati & Suryadi, 2020). Through CBL, students and teachers can make a difference and prove that learning can be more in-depth, interesting and meaningful (Leijon et al., 2022). The CBL learning model by implementing activities outside the classroom can provide a different and efficient learning experience. MTH activities can be an alternative to learning outside the classroom. Students can learn material quickly and apply what they have learned and can make quick decisions and design strategies for action (Crnković et al., 2022). The aim of this research is what is the quality of CBL model learning with MTH activities on problem solving abilities and what is the description of mathematical problem solving abilities in terms of self-confidence with the Challenge Based Learning model in Math Treasure Hunt activities.

METHODS

This research uses mixed methods with a sequential explanatory research design. Sequential explanatory design is a combination of quantitative and qualitative research carried out sequentially, in the first stage data collection and quantitative analysis is carried out, followed by data collection and qualitative analysis in the second stage. The sampling technique uses random sampling and determining research subjects uses purposive sampling technique. In quantitative research, the design used is a posttest only control design, which involves two groups, each of which is chosen randomly, the first group is given treatment in the form of applying CBL to MTH activities and is called the experiment and the other group that is not given treatment is called the control group. The samples in this study were students in class 10C (experimental class) and class 10D (control class) at SMA Semesta Bilingual Boarding School Semarang for the 2023/2024 academic year. Meanwhile, the research subjects consisted of six students with high, medium and low self-confidence. Data collection techniques in this research used observation, questionnaires, tests and interviews.Quantitative data analysis techniques carried out in this research were normality test, homogeneity test, similarity test of two means, learning mastery test by mean, classical learning mastery test by proportion, n-gain test which was carried out either manually using Excel or IBM

Statistics SPSS.

RESULTS AND DISCUSSION

Quality of CBL Model Learning with Implementation of MTH Activities

Planning Stage

Learning quality is a series of activities that can improve student competence. The quality of learning in this research is reviewed quantitatively and qualitatively. Learning planning stages, learning tools and research instruments are validated by expert validators. The learning tools are in the form of Lesson Plans and Worksheets while the research instruments are problem solving questions, self-confidence questionnaires, learning implementation observation sheets, student response questionnaires, and interview guides. Based on the results of the validator's assessment, overall the devices and instruments that have been prepared are valid so they can be used for research. This validity can be seen from the scores given by 3 expert validators for each device in the very good category, so that the devices that have been created are suitable for use in research. A learning device is said to be valid if it is at least in the good category so that the device is suitable for use.

Implementation Stage

Stages of learning implementation, measuring the quality of implementing CBL model learning with MTH activities is carried out through observing the implementation of learning. Observation of learning implementation is used to observe professionalism in implementing learning. The first to fourth meetings obtained an average percentage of learning implementation in the very good category. Based on the assessment results from the learning implementation sheet from the first meeting to the fourth meeting, it can be seen that the CBL model learning with MTH activities is of good quality. The learning was carried out in 4 meetings which are presented in the following table.

Table 1 Implementation of Learning

No	Implementation of Learning	Score & Criteria
1	First Meeting	4.13 (Good)
2	Second Meeting	4.34 (Excellent)
3	Third Meeting	4.26 (Excellent)
4	Fourth Meeting	4.13 (Good)

The material taught in the CBL model learning with MTH activities is setting up equations to solve word problems in the Cambridge curriculum. The first meeting begins with an introduction and in the core activities students take an initial mathematical problem solving ability test and fill out a self-confidence questionnaire individually and end with providing information about what activities will be carried out at the next meeting. The second meeting began with an introduction in the form of a joint prayer led by class representatives, providing motivation and explaining the activity this time, namely the Math Treasure Hunt which uses the Challenge Based Learning model. The first stage is **Big Idea**, students are invited to mention the application of algebra or linear equations of two variables in everyday life, followed by the second stage, namely **Essential Questions**, students are asked to make mathematical models from short story questions given by the teacher and then the teacher gives responses to student answers. The next stage is **The Challenge**, students are divided into several groups with 4 to 5 students in each group then the students gather with their group friends while the teacher explains what challenges each group will undertake outside the room. The next stage is **Guiding Questions, Guiding Activities, and Guiding Resources** where students are given maps, resources (reference sources) and worksheets digitally on their respective iPads by the teacher, then students go to the location according to the clues on them. map, when at the location, students find a QR Code which when scanned appears a question to be answered and the word 'treasure' is found. At this stage, the teacher walks around to ensure the activity runs smoothly. At the second meeting, the Challenge Based Learning syntax that has not been implemented will be continued at the next meeting. The third meeting of students continues the MTH activity which is a continuation of the previous meeting, namely Solutions, students discuss together to solve questions found in several places and then find the word "treasure" which is stored in the right answer, then proceed to the final stage, namely **Publishing and Evaluation and Assessment**, at this stage students are given the opportunity to present the results of their group's work and state the word "treasure" obtained and arrange the words obtained. In the fourth meeting, students were given posttest questions to work on and a self-confidence questionnaire to fill out. At each meeting, students are given a stimulus in the form of problems related to real life and given a

worksheet. Learning with a challenge-based learning model is expected to develop problem-solving abilities and increase students' self-confidence. This is in line with Ayu et al.(2023), the challenge based learning model can show students how they face a problem. Instead of just being given a problem to solve, Torres-Barreto et al. (2020) stated that challenge based learning offers students an overview of general problems and they must find out the challenges that must be overcome. Challenge based learning is not only expected to be able to shape students to be able to face challenges or problems, but is also expected to increase self-confidence which is formed from different learning experiences. In line with Rådberg et al. (2020) stated that in the implementation of challenge based learning there are social effects and learning experiences during and after learning.

Assessment Stage

The final stage of learning that is said to be quality is the assessment stage. In the assessment stage, students are given a questionnaire about student responses to learning. Based on the results of the student response questionnaire, the results obtained were 90.1% with a very positive category, which means that the majority of students gave a good assessment of the learning that had been carried out, felt they understood the material better, found new ideas, dared to express opinions in groups, behaved independently in solve a learning problem, are skilled in understanding mathematical problems, and feel that the CBL model in MTH activities makes mathematics more interesting to learn.

The assessment stage also carried out analysis of problem solving data results and student self-confidence questionnaires. Students were given an initial ability test in the experimental class and control class. The results of the initial ability test show that the average problem solving for the experimental class and the control class is almost the same. Based on the homogeneity test, information was obtained that the two classes had homogeneous variances. Based on the average similarity test, it was concluded that the average initial ability test ability of experimental class and control class students in solving questions was not significantly different. This shows that the experimental class and control class students have the same initial abilities. The experimental class was given a self-confidence questionnaire and a problem solving pretest before being given CBL model learning with MTH activities. Next, CBL model learning was carried out with MTH activities and continued with giving the problem solving posttest and self-confidence questionnaire. The first test was classical completeness, the results showed that the proportion of experimental class students who got a score of 70 had exceeded 75%. The second test is the average difference test between the experimental class and the control class. Based on the results of the mean difference test, the results showed that the average problem solving of experimental class students in solving questions was better than the problem solving of control class students.

The next test is the test of difference in proportions, the result of which is that the proportion of problem solving of students who have completed studying in the experimental class is better than the proportion of problem solving of students who have completed studying in the control class. The fourth test, namely the improvement test, showed that there was an average difference between final and initial self-confidence in the experimental class. Based on the overall average N-Gain value of 0.39 or the increase in self-confidence is in the medium category. These statements show that learning using the CBL model in MTH activities can be said to be of high quality. This is also supported by Kaniawati (2020) who states that implementing the CBL model can effectively improve problem solving abilities in learning. The CBL model learning syntax in MTH activities will guide students in getting used to the problem solving process given, while the initial aim of the Math Treasure Hunt (MTH) strategy is to provide students with outdoor learning experiences by solving problems accompanied by instructions, references and questions.

Mathematical Problem Solving Ability Judging from Student Self-Confidence

Students' mathematical problem solving abilities are viewed from three categories of self-confidence, namely high self-confidence, medium self-confidence, and low self-confidence. The following are the results of the subject categories in the experimental class.

Table 2 Categories of Subjects with High, Medium and Low Self-Confidence

Subject	Category
S01	High
S02	
S03	
S04	
S05	
S06	
S10	
S09	Moderate
S11	
S07	Low
S08	

Students' Mathematical Problem Solving Ability with High Self-Confidence

The following is one of the results of work from students with high self-confidence who are able to fulfill all stages of mathematical problem solving abilities.

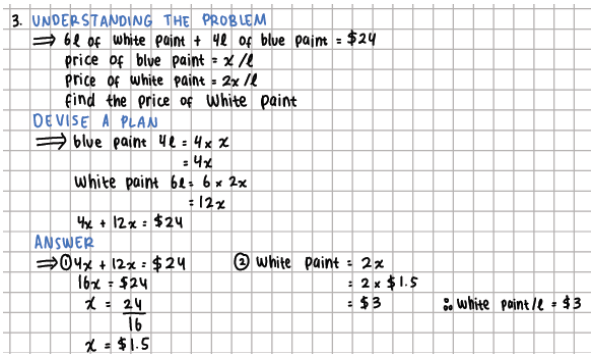

Figure 1 Example of Work Results of Subjects with High Self-Confidence

The following is an interview excerpt from the subject in Figure 1.

P : "Take a look at question number 3, do you understand the meaning of question number 3? Can you explain again what is known and what is being asked?"

S10 : "I understand Ms, the total price for six liters of white paint and four liters of blue paint is $24. The price of white paint is twice the price of blue paint, Ms."

P : "Okay, after you write down the information and what you know, what plan do you plan to use to solve the problem?"

S10 : "Um... I'll write down the equation for the total price of the paint, Ms."

P : "Okay, then how do you get those results from the plan you implemented at the beginning? Are there any difficulties in calculating this problem? Are you sure about your answer?"

S10 : "I am confident in the method I use."

P : "How do you know the error of your answer? What is the final conclusion from this problem?"

S10 : ".I checked and rechecked and the final answer was $3 per liter"

P : "Do you think this question is included in the easy, medium or difficult category?"

S10 : "I think this is a matter of being Ms"

Analysis of the results of the mathematical problem solving ability test on subject S05 shows that the subject can carry out the ideal stages of solving problems with mathematical problem solving ability correctly and precisely. At the stages of Understanding the Problems, Devising a Plan, Implementing a Plan, and Looking Back, subject S05 was able to carry out the stages correctly and precisely. Analysis of the results of the mathematical problem solving ability test on subject S10 shows that subject S10 can carry out the stages of mathematical problem solving ability correctly starting from Understanding the Problems, Devising a Plan, Implementing a Plan, and Looking Back, although in the calculation section less precisely but correctly The outline of the S10 subject is being able to carry out the stages of mathematical problem solving abilities correctly and precisely. Both subjects with high self-confidence can complete all stages of mathematical problem solving abilities correctly and precisely. In line with Asari et al. (2022), subjects with high self-confidence fulfill four stages of mathematical problem solving ability. Fadillah & Ardiawan (2021) stated that because students are confident in their ability to solve problems, students with high self-confidence will try hard to solve the problem.

Students' Mathematical Problem Solving Ability with Moderate Self-Confidence

The following is one of the results of work from students with moderate self-confidence who are able to fulfill all stages of mathematical problem solving abilities.

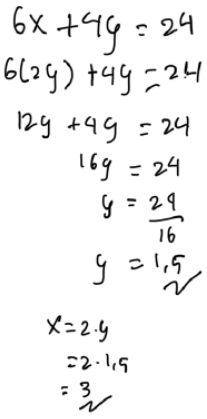

Figure 2 Example of Work Results of Subjects with Medium Self-Confidence

The following is an interview excerpt from the subject in Figure 2.

P : "Take a look at question number 3. What information is in the question?"

S11 : "I understand quite well Ms. Mr. Brian mixed 6 liters of white and 4 liters of blue and the total cost was $24."

P : "Okay, now that you know what you know, what plan do you do to solve the problem?

S11 : "Find the price of blue paint first."

P : "How do you calculate it? How do you know the truth of your answer?"

S11 : "Find the value of y because the value of y is the price of blue paint. I don't know if this Ms is true or not."

Analysis of the results of mathematical problem solving abilities in subject S09 shows that the subject can carry out the stages of mathematical problem solving abilities quite well starting from Devising a Plan and Implementing a Plan. Subject S09 was less able to fulfill the Understanding the Problems stage because he did not understand the meaning of the question, as indicated by not writing down what he knew and what was asked in the question. Subject S09 also did not demonstrate the final stage, namely looking back, because he did not recheck the answers he received. Analysis of the results of mathematical problem solving abilities in S11 subjects shows that the subjects have not been able to carry out the stages of mathematical problem solving abilities. At the Devising a Plan stage, subject S11 is quite able to write down the plan of what will be done, namely writing down the equation and being able to implement the plan prepared, so the Implementing a Plan stage is fulfilled. Subject S11 did not fulfil the Understanding the Problems stage and did not fulfil the Looking Back stage because he did not write down the information stated in the question and did not check again to write the conclusion. The two subjects with moderate self-confidence were not able to complete all stages of mathematical problem solving abilities because only the second and third stages were fulfilled correctly and precisely. Judging from excerpts from the interviews conducted, students felt less confident in their answers, even resigned to the results obtained. This is in line with Badriyah & Sopiany (2023), subjects did not believe in the answers given because they always thought it was difficult before trying it.

Mathematical Problem Solving Ability of Students with Low Self-Confidence

The following is one of the results of work from students with low self-confidence who were able to fulfill all stages of mathematical problem solving abilities

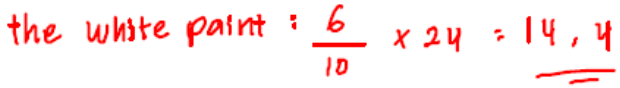

Figure 3 Example of work results for subjects with low self-confidence

The following is an interview excerpt from the subject in Figure 3.

P : "Let's look at question number 3, what do you think about number 3? Do you understand this matter? What information is in the question?"

S08 : "I understand quite well, Ms, but what I understand is that what you are looking for is how much white paint costs."

P : "Okay, now that you know what you are looking for, what plan do you do to solve the problem?

S08 : "I'm looking to use the comparison formula between white paint and overall"

P : "How do you calculate it? How do you know the truth of your answer?"

S08 : "Actually, I don't know whether the method I used was correct or not, I just multiplied it by 6/10×24 Ms."

P : "Are you sure about your answer? Do you think this is an easy, medium or difficult question?"

S08 : I'm not sure Ms., while Ms.

Analysis of the results of mathematical problem solving abilities in subject S07 shows that the subject has not been able to carry out the stages of solving problems with mathematical problem solving abilities. At the stages of Understanding

the Problems, Implementing a Plan, Devising a Plan, and Looking Back, subject S07 was unable to carry out the stages correctly and precisely. Analysis of the results of mathematical problem solving abilities in subject S08 shows that subject S08 is not perfect in carrying out the stages of mathematical problem solving ability correctly starting from Understanding the Problems, Devising a Plan, Implementing a Plan, and Looking Back. The two subjects with low self-confidence were not able to complete all stages of mathematical problem solving abilities correctly and precisely. The two subjects with low self-confidence in this study were not able to fulfill the first stage, in line with Badriyah & Sopiany (2023), subjects with low self-confidence were still less able to understand the problems presented.

CONCLUSION

The use of the Challenge Based Learning model in the implementation of Math Treasure Hunt Activities can be said to be quality applied in mathematics learning. Students' mathematical problem solving abilities with high self-confidence are able to fulfill all stages; while the mathematical problem solving abilities of students with moderate self-confidence are able to fulfill the second and third stages; and students with low self-confidence are not yet able to fulfill all stages perfectly. So, mathematical problem solving abilities and self-confidence still need to be developed

REFERENCES

Asari, T. R., Balkist, P. S., & Imswatama, A. (2022). Analisis Kemampuan Pemecahan Masalah Matematis Siswa Ditinjau dari Self Confidence. *Prisma*, *11*(2), 447.

Ayu, A. S., Ardiansyah, A. S., & Waluya, S. B. (2023). Literature Study: Improving Critical Thinking Ability Through a Challenge Based Learning Model with a STEM Nuance with the Help of Kahoot! *SEMANTIK: Prosiding Seminar Nasional Pendidikan Matematika*, *November*, 145–150.

Badriyah, D., & Sopiany, H. N. (2023). Kemampuan Pemecahan Masalah Matematis Siswa SMK Berdasarkan Tingkat Self Confidence. *Didactical Mathematics*, *5*(1), 107–116.

Capone, R., Del Sorbo, M. R., Pisa, A., & Trerotola, M. (2019). Challenge-Based Learning and Game-Based Learning To Improve Mathematical Competencies: an Italian Case Study in Secondary School. *EDULEARN19 Proceedings*, *1*(July), 571–578.

Căprioară, D. (2015). Problem Solving - Purpose and Means of Learning Mathematics in School. *Procedia - Social and Behavioral Sciences*, *191*, 1859–1864.

Crnković, V. M., Traunkar, I., & Crnković, B. (2022). *Treasure Hunt as a Method of Learning Mathematics*. *2017*, 349–357.

Fadillah, S., & Ardiawan, Y. (2021). Pengaruh Model Problem Solving Dan Problem Posing Terhadap Kemampuan Pemecahan Masalah Ditinjau Dari Self Confidence. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *10*(3), 1373.

Funke, J., Fischer, A., & Holt, D. V. (2018). *Competencies for Complexity: Problem Solving in the Twenty-First Century*. 41–53.

Furner, J., & Berman, B. (2005). Confidence in their ability to do mathematics: The need to eradicate math anxiety so our future students can successfully compete in a high-tech globally competitive world. *Dimensions in Mathematics*, *18*(1), 28–31. anxiety_2.htm

Hermawati, H., Jumroh, J., & Sari, E. F. P. (2021). Analisis Kemampuan Pemecahan Masalah Matematis pada Materi Kubus dan Balok di SMP. *Mosharafa: Jurnal Pendidikan Matematika*, *10*(1), 141–152.

Irhamna, I., Amry, Z., & Syahputra, H. (2020). Contribution of Mathematical Anxiety, Learning Motivation and Self-Confidence to Student's Mathematical Problem Solving. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal*, *3*(4), 1759–1772.

Kaniawati, D. S. (2020). Pengaruh Penerapan Model Pembelajaran Challenge Based Learning terhadap Kemampuan Pemecahan Masalah Listrik Arus Searah. *Dinamika: Jurnal Praktik Penelitian Tindakan*, *10*(2), 1–12.

Khatimah, H., & Sugiman, S. (2019). The effect of problem solving approach to mathematics problem solving ability in fifth grade. *Journal of Physics: Conference Series*, *1157*(4).

Kohn Rådberg, K., Lundqvist, U., Malmqvist, J., & Hagvall Svensson, O. (2020). From CDIO to challenge-based learning experiences–expanding student learning as well as societal impact? *European Journal of Engineering Education*, *45*(1), 22–37.

Leijon, M., Gudmundsson, P., Staaf, P., & Christersson, C. (2022). Challenge based

learning in higher education– A systematic literature review. *Innovations in Education and Teaching International*, *59*(5), 609–618.

Moneva, J., & Tribunalo, S. M. (2019). Students' Level of Self-confidence and Performance Tasks. *Asia Pacific Journal of Academic Research in Social Sciences*, *5*(May 2020), 42–48.

NCTM. (2000). *Principles and Standards for School Mathematics* (Vol. 21, Issue 1).

Nuryana, D., & Rosyana, T. (2019). Analisis Kesalahan Siswa Smk Dalam Menyelesaikan Soal Pemecahan Masalah Matematik Pada Materi Program Linear. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *3*(1), 11–20.

Otacioğlu, S. G. (2008). Prospective teachers' problem solving skills and self-confidence levels. *Kuram ve Uygulamada Egitim Bilimleri*, *8*(3), 915–923.

Permendikbud. (2016). Undang-Undang Republik Indonesia Nomor 21 Tahun 2016 tentang Standar Isi Pendidikan Dasar dan Menengah. *Internatinal Science*, *5*, 1–238.

Purnama, S., & Mertika. (2018). Analisis Kemampuan Pemecahan Masalah Siswa Ditinjau dari Self Confidence. *Journal of Educational Review and Research*, *1*, 59–63.

Sari, R. K. (2019). Analisis Problematika Pembelajaran Matematika Di Sekolah Menengah Pertama Dan Solusi Alternatifnya Raras Kartika Sari Pendidikan Matematika , IKIP Budi Utomo Malang Matematika memiliki peranan penting dalam segala aspek kehidupan terutama dalam meningkatk. *Pendidikan*, *2*(1), 23–31.

Surya, E., Putri, F. A., & Mukhtar. (2017). Improving mathematical problem-solving ability and self-confidence of high school students through contextual learning model. *Journal on Mathematics Education*, *8*(1), 85–94.

Surya, H. (2007). *Percaya Diri itu Penting*. Elex Media Komputindo.

Szabo, Z. K., Körtesi, P., Guncaga, J., Szabo, D., & Neag, R. (2020). Examples of problem-solving strategies in mathematics education supporting the sustainability of 21st-century skills. *Sustainability (Switzerland)*, *12*(23), 1–28.

Tanjung, Z., & Amelia, S. (2017). Menumbuhkan Kepercayaan Diri Siswa. *JRTI (Jurnal Riset Tindakan Indonesia)*, *2*(2), 2–6.

Torres-Barreto, M. L., Castaño, G. P. C., & Melgarejo, M. A. (2020). Advances in Engineering Education A Learning Model Proposal Focused on Challenge-Based Learning. *Advances in Engineering Education*, *8*(2), 1–23.

Widyanto, I. P., & Wahyuni, E. T. (2020). Implementasi Perencanaan Pembelajaran. *Satya Sastraharing*, *04*(02), 16–35.