

THE EFFECT OF APPLYING THE PROBLEM SOLVING LEARNING MODEL ON STUDENTS' CRITICAL THINKING SKILLS

Tesalonika Br Tarigan¹, Siswita Anggreni Br Ginting², Meikardo Samuel Prayuda³

^{1,2,3} Universitas Katolik Santo Thomas, Medan, Indonesia

Corresponding Author: tesalonika@gmail.com

Abstract

This research aims to analyze the effect of applying the problem solving learning model on students' critical thinking skills. The problem solving learning model was chosen because it is considered capable of stimulating students to be active in the learning process, identify problems, and find solutions independently or in groups. This is in line with the needs of 21st century education which emphasizes critical thinking skills as one of the main skills that students must have to face global challenges. This research uses a quantitative approach with a quasi-experimental research design. The population in this study were class VIII students at a junior high school in the 2023/2024 academic year. The research sample consisted of two randomly selected classes, with one class as an experimental group using a problem solving learning model and the other class as a control group using conventional learning methods. The research instrument is a critical thinking skills test that has been previously validated, as well as an observation sheet to observe the learning process. The results showed that there were significant differences between the experimental group and the control group in terms of critical thinking skills. Students who learn using problem solving models show a higher increase in critical thinking skills compared to students who learn using conventional methods. This can be seen from the results of the critical thinking skills test which shows that the average score of the experimental group is significantly higher than the control group. The application of the problem solving learning model also has a positive impact on student involvement in learning. Observations show that students are more active in discussing, asking questions, and providing solutions to problems presented in learning. These findings support that the problem solving model not only improves critical thinking skills, but is also able to create a more interactive and meaningful learning atmosphere. This research concludes that the problem solving learning model has a significant influence on students' critical thinking skills. Therefore, this model is recommended to be applied more widely in the learning process, especially in subjects that require problem solving and decision making. It is hoped that these findings can become a reference for teachers and educational practitioners in designing effective learning strategies to develop students' critical thinking skills.

Keywords

Improving Student Skills; Problem Solving Process; Problem Solving Learning Model

Introduction

Education is a structured process to create conditions where learning can take place actively, both for educators and students. One important aspect of education is critical thinking skills, which enable students to interpret, analyze and solve problems effectively. To improve this ability, educators often apply problem solving learning models. This model requires students to think actively and critically in dealing with problems, and gives them the opportunity to practice the knowledge they have in real situations. This problem-based learning not only develops critical thinking skills, but also increases students' independence in discovering knowledge.

In the 2013 curriculum, the problem solving learning model is recognized as an approach that can improve students' critical thinking skills. The basic syntax of this model includes the stages of understanding the problem, planning a solution, implementing the plan, and reviewing the results. The application of this model in the classroom aims not only to improve cognitive skills, but also students' social and spiritual attitudes. In this way, students not only learn how to solve problems, but also learn to collaborate and respect other people's perspectives.

The main benefit of implementing the problem solving learning model is improving critical thinking skills, which is reflected in students' ability to analyze situations, identify possible solutions, and evaluate and make decisions based on existing information. With this model, students are trained to think more creatively and rationally, skills that are very important in everyday life and in the professional world in the future. Apart from that, this model also encourages students to be more active in learning and feel more valued because they have the opportunity to express opinions and solutions.

The application of the problem solving learning model can provide a number of significant benefits for students, such as increasing independence, analytical skills, creativity, and involvement in learning. Students are invited to not only solve problems independently, but also to participate in relevant and interesting activities, which can increase their learning motivation. Critical thinking skills acquired through this model can also be applied in everyday life and other subjects, creating a transfer of skills that benefits their overall development.

With the hope that the application of this model can improve students' critical thinking skills, it is also hoped that a more interesting and enjoyable learning atmosphere will be created. Students are expected to become more independent and confident in solving problems, and have a deeper understanding of the material being studied. Problem solving learning, with

active involvement of students, is expected to motivate them to be more involved in the learning process, resulting in a significant increase in learning outcomes.

Methods

The approach used is a qualitative approach and descriptive design. This research will investigate and describe students' critical thinking skills when solving systems of linear equations in two variables. The research was carried out at Al-Izzah Middle School, Sorong City using 20 middle school students. Interviews were conducted to analyze, clarify and analyze more deeply the results of working on questions based on test instruments that use indicators of critical thinking skills and problem solving models.

With the help of knowledgeable lecturers and mathematics education teachers at Al-Izzah Middle School, Sorong City, research tools were created such as student worksheets (LKS), observation sheets, interview guides, critical thinking ability tests, and validity tools.

taught using questions that demonstrate the ability to think critically. In other words, students who have high scores are able to complete all the indicators used in problem-based questions. Students with low scores still need basic training in understanding the material on systems of linear equations in one variable.

It can be concluded that the level of critical thinking of class IV students at SD Al-Kautsar Bandar Lampung is still relatively inadequate. One reason why many students are not yet able to think critically is that educators still use conventional models and are not very effective in implementing problem solving learning models.

Based on the results of observations, the learning activities of class IV students at Al-Kautsar Elementary School look monotonous, this can be seen where educators are less active in inviting students to be active in learning in class. This is because the learning carried out is still centered on the educator and the learning model used is not appropriate to the lesson to be delivered.

The results of observations in preliminary research, researchers have not seen educators using problem solving learning models. The results of preliminary research conducted by interviewing fourth grade educators show that the problem solving learning model has not been implemented in classroom learning. Educators use other models in teaching and it appears that students are less active in learning in class, because this looks monotonous in a learning process, as a result students' skills are also lacking. Research Place and Time

Discussion

In conducting this research, we conducted interviews with five elementary school children in the surrounding area. Before the interview, we ask their permission first to find out whether they are willing to be interviewed and answer the questions we will ask. All students agreed to participate in these interviews, so that we could continue the data collection process.

We prepared several questions related to learning and the application of problem solving models, which will later be asked to students.

Before starting to ask questions, we first asked students whether they already understood the concept of problem solving. Some students answered that they already understood, while others said they didn't. Therefore, we provide a brief explanation of what problem solving is, and how it is applied in learning. After this explanation, students who previously did not understand problem solving problems can now provide better answers to the questions we ask

Some of the questions we asked were related to barriers to learning, the influence of problem solving on learning, and the application of problem solving models by teachers. Most students expressed that their main obstacles in learning were lack of focus, inconsistency, and lack of interest in lessons. When asked about the extent to which problem solving influences learning, students' answers varied. There are those who feel that the problem solving model does not have a significant influence, while some other students feel that this approach makes learning easier to understand and quite interesting.

Apart from that, we also asked whether the teacher had implemented problem solving in every learning activity. The answers obtained show that the majority of students feel that teachers quite often or even always use this model in learning. However, some students feel less enthusiastic or bored with the application of problem solving, but there are also those who feel that this approach can broaden their insight and make learning more interesting.

After that, we asked students' opinions regarding the suitability of problem solving to be applied in learning. Some students feel that the application of problem solving in learning is very useful and helps them understand the material better, while some other students feel that this model is not suitable. However, the majority of students agree that problem solving can be applied in learning to make the material easier to understand.

Based on the results of the interviews, we can see that there are differences of opinion among students regarding the application of the problem solving model. However, on average students feel that the application of this model is quite useful in improving their understanding of the subject matter. Apart from that, the test results we collected also showed that the majority of students who took learning with a problem solving approach obtained better grades, with an average class score of 80.2, where 4 out of 5 students passed. This shows that the application of problem solving can contribute to improving student learning outcomes, although there are some students who feel less interested in this method.

Overall, the data obtained shows that problem solving as a learning model has good potential to improve students' critical thinking skills. Although there are challenges in its implementation, especially related to the level of student involvement and interest, the results obtained show that learning that involves problem solving can help students understand the material better, increase creativity, and develop a more active attitude in learning. Thus, it can

be concluded that the application of problem solving in learning can be an effective alternative for improving the quality of learning in schools.

Continuing the results of the interviews and analysis that have been carried out, it is important to note that although the majority of students feel the benefits of applying the problem solving model, there are also those who show challenges in terms of interest and involvement. This shows that although this approach has great potential to improve students' understanding of the subject matter, motivation and interest factors remain important elements that need to be considered in its implementation. One of the reasons why some students feel less interested in this method may be related to the way teaching or learning is too monotonous or does not suit their learning style.

However, students who are interested and find the problem solving model useful generally show an increase in their analytical and creative abilities. They can solve problems in a more systematic and logical way, and feel more involved in the learning process. This is an indicator that problem solving-based learning can encourage students to become more independent in thinking and solving problems, which are important skills in everyday life and the world of work.

In this case, the teacher's role is very important in ensuring that problem solving learning can be implemented well and effectively. Teachers must be able to create an interesting and challenging learning atmosphere, and ensure that students truly understand the concepts and steps in solving problems. Proper implementation of this model can make learning more enjoyable and relevant for students, which in turn will increase their engagement and motivation to learn.

It is also important to consider that problem solving is not an approach that is suitable for every type of material or situation. Some types of lessons or concepts may be better taught using other, more direct and structured methods. Therefore, teachers need to have a good understanding of the characteristics of each material and choose the most appropriate learning model to achieve the desired learning goals.

On the other hand, the data we obtained also shows that the application of problem solving has a positive influence on student learning outcomes. With 80% of students passing and a fairly high average score, it can be said that this model has succeeded in increasing their understanding of the subject matter. This confirms that although there are several obstacles, such as a lack of focus and interest in some students, the problem solving model can have a significant impact on improving student academic results, especially in the aspects of problem solving and critical thinking.

For this reason, the application of problem solving learning must continue to be evaluated and adapted to student needs. Suggestions for further research are to deepen the analysis regarding the factors that influence students' interest in this model, as well as exploring various teaching strategies that can maximize the effectiveness of applying problem solving in learning. In this way, it is hoped that learning can be more optimal in improving students'

critical thinking skills, as well as preparing them to face future challenges in a more structured and creative way.

Conclusion

Based on the research results, it can be concluded that the application of problem solving is important in learning because students will be more focused and creative in learning and can understand the material provided.

Teachers must pay attention to each step of the problem solving learning model so that learning success can be achieved in accordance with the specified targets, teachers take an individual approach so that it is easier for students to solve problems correctly, students should participate in learning activities in an orderly manner so that learning success can be achieved well. . Students should have high motivation and self-confidence and be active in learning activities to achieve better learning results, especially in solving problems (questions).

References

- Afrida, N. 2019. Implementasi Pendekatan Problem Solving dengan Model Eliciting Activities untuk Meningkatkan Kemampuan Berpikir Kritis Matematika Siswa Smp. *Jurnal On Education*. 4:617-618
- Albert Efendi Pohan, S. 2020. Konsep Pembelajaran Daring Berbasis Pendekatan Ilmiah..CV Sarnu Untung, Jawa Tengah.
- Ani, F. 2019. Model Pemecahan Masalah(Problem Solving) Hasil Belajar Siswa Pada Mata Pelajaran Ipa di Kelas IV Sekolah Dasar Negeri No 166/VII Guruh Baru 1 Kec Mandi Angin Kab Sarolangun. (Skripsi). Universitas Jambi,Jambi
- Anisa, R. 2015. Penggunaan Model Pembelajaran Problem Solving untuk Meningkatkan Berpikir Kritis Terhadap Hasil Belajar. *Jurnal Penelitian*. 5: 7-8
- Prayuda, M. S., Pangaribuan, J. J., & Linia, A. (2023). The Effect of Genre Based Approach For The Students Writing Skill. *Jurnal Pendidikan Tambusai*. <https://jptam.org/index.php/jptam/article/view/9454>
- Sri Setianingsih Suwardi, (2006), *Penyelesaian Sengketa Internasional*, Jakarta: Universitas Indonesia, h.1
- Wahdah, W., Prayuda, M. S., Juliana, J., & ... (2023). Approaches in designing effective classroom management system: a comparative study. In ... *Literacy: Journal of ... core.ac.uk*. <https://core.ac.uk/download/pdf/578296382.pdf>
- Prayuda, M. S., Juliana, J., Ambarwati, N. F., & ... (2023). Students' Writing Error in Parts of Speech: A Case Study of EFL Students. *Jurnal Educatio FKIP* <https://www.ejournal.unma.ac.id/index.php/educatio/article/view/4419>

Prayuda, M. S., Sinaga, D. R., & Gultom, C. R. (2023). ENGLISH CONVERSATION TRAINING FOR HIGH SCHOOL STUDENTS IN KISARAN. PEDAMAS (PENGABDIAN <https://pekatpkm.my.id/index.php/JP/article/view/53>

Prayuda, M. S. (2023b). Penyuluhan Bahasa Inggris Dasar Daily Speaking Pada Anak-Anak Di Desa Salaon Toba Kabupaten Samosir. Welfare: Jurnal Pengabdian Masyarakat. <https://jurnalfebi.iainkediri.ac.id/index.php/Welfare/article/view/574>
