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STEM-Based Teacher Development with Pentahelix Strategy: Enhancing Students' Critical Thinking and Problem-Solving

Tini Agustiani[1], Didit Ardianto[2], Tustiyana Windiyani[3]
[1,2,3] Pakuan University, Bogor, Indonesia
Email : nugi.agustiani@gmail.com[1], diditardianto@unpak.ac.id[2], tustiyana@unpak.ac.id[3]

Abstract: This research aims to explore the influence of a STEM (Science, Technology, Engineering, and Mathematics)-based teacher professional development model with the Pentahelix strategy on elementary school students' critical thinking and problemsolving abilities. The Pentahelix strategy involves synergy between five main elements: government, academia, industry, community and media, which together support and develop teacher competence. The research method used is a quasi-experimental research method which consists of 2 research groups, namely an experimental group and a control group with nonequivalent pretest-posttest control group design. The sample for this research was students from classes VA and VB at SD Negeri Katulampa 5. Class VA was the experimental group with learning using a STEM approach provided by teachers who had received training, and class VB was the control group with learning without a STEM approach by teachers who had not received training. The results showed that there was a significant increase in students' critical thinking and problemsolving abilities in the experimental group compared to the control group. Teachers trained with a STEM-based professional development model show improvements in conceptual understanding, teaching abilities, and the ability to design learning activities that are challenging and relevant for students. The conclusion of this research is that the STEM-based teacher professional development model with the Pentahelix strategy is effective in improving elementary school students' critical thinking and problemsolving skills. The implications of these findings support the importance of collaboration between various parties in improving the quality of education and provide recommendations for policy makers to adopt a similar approach in teacher development programs.

Abstrak: Penelitian ini bertujuan untuk mengeksplorasi pengaruh model pengembangan profesionalisme guru berbasis STEM (Science, Technology, Engineering, and Mathematics) dengan strategi Pentahelix terhadap kemampuan berpikir kritis dan pemecahan masalah siswa sekolah dasar. Strategi Pentahelix melibatkan sinergi antara lima elemen utama: pemerintah, akademisi, industri, komunitas, dan media, yang bersama-sama mendukung dan mengembangkan kompetensi guru. Metode penelitian yang digunakan adalah metode penelitian quasi eksperimental yang terdiri dari 2 kelompok penelitian, yaitu kelompok eksperimen dan kelompok kontrol dengan desain nonequivalent pretest-posttest control grup design. Sampel penelitian ini adalah siswa kelas VA dan VB SD Negeri Katulampa 5. Kelas VA menjadi kelompok eksperimen dengan pembelajaran menggunakan pendekatan STEM yang diberikan oleh guru yang sudah mengikuti pelatihan, dan kelas VB sebagai kelompok kontrol dengan pembelajaran tanpa pendekatan STEM oleh guru yang tidak mengikuti pelatihan. Hasil penelitian menunjukkan bahwa terdapat peningkatan signifikan dalam kemampuan berpikir kritis dan pemecahan masalah siswa di kelompok eksperimen dibandingkan dengan kelompok kontrol. Guru yang dilatih dengan model pengembangan profesionalisme berbasis STEM menunjukkan peningkatan dalam pemahaman konsep, kemampuan mengajar, dan kemampuan merancang kegiatan pembelajaran yang menantang dan relevan bagi siswa. Kesimpulan dari penelitian ini adalah bahwa model pengembangan profesionalisme guru berbasis STEM dengan strategi Pentahelix efektif dalam meningkatkan kemampuan berpikir kritis dan pemecahan masalah siswa sekolah dasar. Implikasi dari temuan ini mendukung pentingnya kolaborasi antar berbagai pihak dalam meningkatkan kualitas pendidikan dan memberikan rekomendasi bagi pembuat kebijakan untuk mengadopsi pendekatan serupa dalam program pengembangan guru.

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INTRODUCTION

Scientific literacy has become the topic most discussed by academics and practitioners in the world of education in the 21st century. This is based on the components of scientific literacy which every individual must have in order to create a modern society that is scientifically literate both in essence and application (F et al., 2018). According to Yusuf (2003), scientific literacy is important for students to master in relation to understanding health, economics, the environment and other problems faced by modern society. Scientific literacy is an important thing to master because it provides a context for overcoming social problems. People who are scientifically literate are considered to be better at dealing with everyday problems and can make good decisions based on the information they obtain. Meanwhile, the results of the PISA science literacy survey in 2018 showed that Indonesia was ranked 71st out of 79 countries with an average score of 396. Based on these results, it was found that Indonesia's performance had decreased compared to the 2015 PISA results (Zickuhr, 2016). This shows that the overall scientific literacy achievements of Indonesian students are still low.

The results of research conducted on students in Bogor City and Cianjur Regency in 2021 show that students' STEM literacy still needs to be improved. Data on students' STEM literacy achievements is still quite low with an average of 32% of all domains. Apart from that, the research results also show that the average interest score of elementary and middle school students in the fields of science, technology, engineering and mathematics is 2.5 out of a maximum score of 5 (Ardianto D, 2021). One of the causes of students' low STEM interest and literacy is the mismatch of learning with the demands of the 21st century. Research conducted in elementary schools, especially in Bogor City in 2021, shows that learning in elementary schools still does not facilitate students to think at a higher level. The results of the analysis show that 85% of teachers have not used an interdisciplinary approach in the learning process. Apart from that, 98% of teachers still use the lecture method and focus more on cramming concepts. Only 10% of teachers use the process problem solving in practice and the majority of teachers have not involved ICT in the learning process in the classroom (Windiyani T, 2022)

A preliminary study on elementary school teachers in the city of Bogor shows the need to develop a STEM literacy-based teacher development model. A two-week cross-sectional survey in July 2023, involving 215 elementary school teachers, the majority of whom were women, revealed that most teachers rarely use inquiry, experimentation, problem-based learning and flipped classroom learning methods in teaching STEM content. This is contrary to the principles of STEM education which emphasizes scientific and engineering practices. Collaborative learning is the most commonly used approach, indicating a mismatch with the essence of STEM education. The implementation of the Merdeka curriculum, which emphasizes STEM-based learning, is also not optimal. These findings emphasize the need to strengthen teacher competency in STEM education.

In addition, elementary school students are still rarely involved in scientific and engineering practices during learning, which strengthens the conclusion that the learning approach used is not yet in accordance with STEM education. Margot and Kettler analyzed 25 articles on teacher perceptions of STEM education integration, finding several barriers to implementation, including difficulties in integrating STEM curriculum and the absence of an interdisciplinary collaboration platform. Teachers believe that organized professional development can improve the implementation of STEM education (Margot, K. C., & Kettler et al., n.d. 2011). STEM-based teacher professional development is important in the context of modern education. Based on the results of research on teacher readiness in developing STEM-based modules, several obstacles were found faced by teachers, such as a lack of in-depth understanding of STEM-based learning, limited time available, low student interest and participation in STEM learning, and minimal teacher experience in implementing STEM-based learning (Wan Jaafar & Maat, 2020). This shows that STEM-based teacher professional development needs further attention to overcome these challenges. Education in the 21st century emphasizes the quality of professional teachers who aim to create superior students and better quality education (Prihartini, 2013). Professional teachers are needed to be able to create much better quality education. This is because the task of teachers as a profession is not only to teach students, but teachers also have the task of educating and training students to form students with character and skills that are in accordance with the demands of the 21st century (Fetra Bonita Sari, Risda Amini, 2020). In a meta-analysis of 95 professional development programs in STEM disciplines, Lynch et al. found a positive effect on student achievement. The results of their analysis provide findings on several characteristics of teacher professional development that are associated with increased student achievement, including the following: Focusing on increasing teacher content knowledge/pedagogical content; Focusing on how to use the new curriculum; Providing workshops to start the professional development process, followed by meetings to solve problems and discuss teaching practices in the classroom (Lynch, et al., n.d.2019). Professional development programs can significantly improve teachers' content knowledge and their ability to analyze teaching practices. Furthermore, participants were better able to facilitate students' science learning (Roth 2019). According to (Darling-Hammond, 2017) there are seven design elements in effective teacher professional development, including:

a. Content focus
b. Use of models and modeling
c. Active learning
d. Collaboration

e. Expert training and support
f. Feedback and reflection
g. Continuous training duration.

The survey results identified that it is necessary to hold a STEM literacy-based elementary school teacher development program with a pentahelix strategy. Developing a strategy with a pentahelix is essential in implementing STEM (Science, Technology, Engineering, and Mathematics) learning because this model involves various important parties, such as academics, practitioners/businesses, communities, government, and the media (Amin, 2020). Pentahelix is an innovative development model designed to integrate various interests and perspectives in socio-economic development (Maturbongs, 2020). Here are some reasons why developing a strategy with a pentahelix is necessary in STEM learning: (a) Overcoming obstacles (Amin, 2020) (b) Increasing competitiveness (Krisnanik et al., 2021)) (c) Encouraging innovation (Amin, 2020) (Maturbongs, 2020) (d) Increasing involvement (Deputi, n.d.) and (e) Creating human resources (Krisnanik et al., 2021). The synergy of pentahelix involving academics, practitioners, teacher communities, government, and the media is expected to produce a coaching program that can improve critical thinking and problem solving of elementary school students in implementing STEM learning. In developing professionalism, the Pentahelix strategy allows collaboration between various aspects of society and non-profits, which To produce innovation, support is needed from various resources that collaborate harmoniously (Priambudi, 2022).

Based on the context that has been described and previous studies, the implementation of the Pentahelix strategy in teacher professional development aims to strengthen teachers' capacity in integrating STEM learning with relevant and contextual approaches. In Era 4.0, education is becoming increasingly crucial to ensure that students develop learning and innovation skills, master information technology and media, and are able to work and survive by mastering high-order thinking skills (HOTS) (Novianti, 2020). Critical thinking involves reasoned and reflective thinking, with an emphasis on decision making about what to believe or do (Situmorang et al., 2021). Critical thinking skills are very important in education because they help students develop deep and reflective thinking skills, which are useful in solving complex problems and making the right decisions. (Facione, 2011). In addition to critical thinking, students' ability to solve problems is part of higher-order thinking skills (HOTS). Polya (1985) defines problem solving as an effort to find solutions to difficulties to achieve goals that cannot be easily achieved. Problem Solving teaches students to solve problems enabling them to become more skilled in real-life decision making. When faced with a problem, students try to find a solution, learning through the problem-solving process (Handayani, 2017). In the learning process, problem solving is very important because it allows students to gain experience, skills and knowledge that can be applied in dealing with unusual problems. To develop problem-solving skills in students, teachers need to use a learning approach that gives students the opportunity to apply their own ideas in solving problems. An effective learning approach to facilitate students in optimizing problem-solving skills is the Science, Technology, Engineering, and Mathematics (STEM) approach (Riani et al., 2022). Education in the era of globalization requires the younger generation to have various 21st century skills, one of which is critical thinking and problem-solving skills. This ability is very important to face various challenges and complexities in the future. Thus, teachers can be more effective in teaching and are able to encourage students to think critically and solve problems independently. To achieve this goal, innovative and relevant learning approaches such as STEM need to be integrated into the curriculum. By utilizing the Pentahelix strategy, which involves collaboration between government, academia, industry, communities, and the media, teacher professional development can be enhanced to support more effective and contextual learning.

RESEARCH METHOD

A. Research Methods and Design

According to Sugiyono (2012, p. 2) states that research methods are a scientific way to obtain data with specific purposes and uses. Therefore, the method that the author uses in this research is a quasi-experimental research method which consists of 2 research groups, namely the experimental group and the control group.

The existence of the experimental group and the control group were not chosen randomly so the research design chosen was a nonequivalent pretest-posttest control group design. According to Sugiyono, nonequivalent pretest-posttest control group design is the most popular approach in quasi-experimental settings, the experimental group and control group are not chosen randomly. Both groups were given a pre-test and post-test and only the experimental group received treatment. The experimental group was given treatment where learning with a STEM approach on material about the role of society in overcoming environmental problems was given by teachers who had received teacher professionalism development training with a STEM approach through the Pentahelix strategy. The research design can be seen in the table below.

Table 1 Experimental Research Design

Group	Pre-test	Treatment	Post-test
Experimental Group (KE)	AND_1	X	AND_2
Control Group (KK)	AND_1	-	AND_2

Information:
KE : Experimental Group with STEM approach (treatment)
KK : Control Group without STEM approach (non treatment)
Y1 : Initial test questions (pretest)
Y2 : Final question (posttest)
X : Treatment

B. Research Subjects

A sample is a portion of the population selected for a research process that is considered to represent the entire population. This is in line with the explanation (Junaedi, 2013) that the sample is a part or representative of the population studied. The sample for this research was students from classes VA and VB at SD Negeri Katulampa 5. Class VA was the experimental group with learning using a STEM approach provided by teachers who had received training, and class VB was the control group with learning without a STEM approach by teachers who had not received training. .

C. Research Intrument and Data Analysis Technique

Table 2 lists research intruments and data analysis techniques that are used in this research.

Table 2. Data Analysis Technique

No.	Data retrieved	Research instrument	Data retrieval technique	Data analysis technique
1.	STEM Learning	Written test (Multiple choice)	Pretest dan post test	Quantitative using SPSS
2.	Critical thinking skills	Observation sheet	Observation throughout learning process	Descriptive
3.	Problem solving skill	Questionnaire	Post test	Descriptive
4.	Student's response to STEM learning model	Survey	Post test	Descriptive

D. Research Procedure

Based on the research objectives outlined above, the focus of this study is on improving the quality of education by integrating the teacher professionalism development model through the Pentahelix Strategy. This research focuses on how collaboration between the five key elements in the Pentahelix Strategy, namely government, academics, business, community and media, enhances the development of critical thinking and problem-solving skills. can support elementary students. students in STEM education. This research also aims to identify factors that contribute to the successful implementation of the Pentahelix Strategy and measure the direct impact of the teacher professional development model on increasing students' competence in STEM learning.

FINDINGS AND DISCUSSION

A. Implementation of STEM Learning

The implementation of STEM learning in the experimental group in assessing students' critical thinking and problemsolving abilities in science and science lessons on the role of society in overcoming environmental problems was carried out by observing when learning took place. Observation assessment criteria include three categories, namely problem identification, information collection, and preparation of solutions carried out directly by the teacher with students when carrying out learning. A recapitulation of the results of assessing students' critical thinking and problemsolving abilities in relation to the implementation of STEM learning can be seen in the table below.

Table 3 Recapitulation of Observation Assessment Results for Implementation of STEM Learning

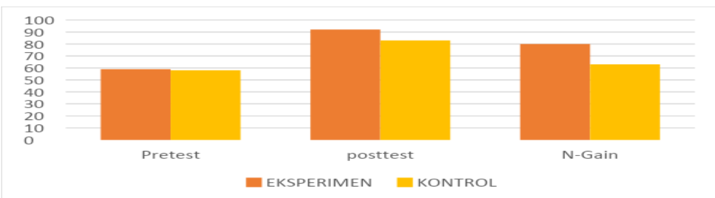
No	Student	Statement			Qty	%	Predicate
		1	2	3			
1	THE	5	5	5	15	100	Very good
2	DMA	5	4	5	14	93	Very good
3	DS	5	4	4	13	87	Very good
4	CHORES	5	4	5	14	93	Very good
5	NOK	5	3	4	12	80	Good
6	KT	5	4	4	13	87	Very good
7	MQS	5	3	4	12	80	Good
8	MFR	5	4	4	13	87	Very good
9	MH	5	4	4	13	87	Very good
10	MLA	5	3	4	12	80	Good
11	MAFJ	5	4	3	12	80	Good
12	MASR	5	4	4	13	87	Very good
13	MDK	5	4	3	12	80	Good
14	MFAH	5	4	4	13	87	Very good
15	MHS	5	4	4	13	87	Very good
16	MH	5	4	4	13	87	Very good
17	MLR	5	4	3	12	80	Good
18	ME	5	5	3	13	87	Very good
19	MR	5	4	4	13	87	Very good
20	MRRA	5	4	4	13	87	Very good
21	MSA	5	4	4	13	87	Very good
22	NZ	5	3	3	11	73	Enough
23	SK	5	4	5	14	93	Very good
24	SFN	5	4	5	14	93	Very good
25	SNJ	5	4	4	13	87	Very good
Amount					**2153**	**86**	**Very good**

Information: 1. identify the problem,
2. collection of information,
3. and preparation of solutions

Based on the table of recapitulation results of the assessment of students' critical thinking and problem solving skills through observation, an average score of 86% was obtained with a very good predicate, with details of 18 students with a very good predicate, 6 students with a good predicate, and one student with a fair predicat .

B. Critical Thinking Skills

The difference in students' thinking skills in the experimental group and the control group can be seen based on the difference in the average N-Gain score for STEM learning outcomes in the two groups. The average N-Gain score obtained based on the results of the pretest and posttest assessments in the two groups was 82 in the experimental class and 62 in the control group. The comparison of the average N-Gain scores of the two groups is explained in the following histogram image.



After knowing the average N-Gain score, then carry out a hypothesis test using the t test technique. Before carrying out a hypothesis test, the hypothesis prerequisite test is first carried out, namely carrying out a normality test and a homogeneity test.

1. Normality test

Normality testing was carried out on both data groups consisting of the experimental group and the control group. Normality testing is carried out using the Liliefors (L) test, with the following conditions:

H0: Lcount > Ltable, meaning the sample comes from an abnormal population

Ha: Lcount<Ltable, means the sample comes from a normal population.

Table 4 Normality Test Results

Group	N	Dk	*N-Gain*	t_{count}	t_{table}
Experiment	25	48	80	14	2,01174
Control	25		63		

Based on the normality test using Liliefors in the experimental group treated using the STEM approach, the L count was (0.023). This price is compared with the Ltable price (0.180) and the error level is 5%, so the distribution of the experimental group data using the STEM approach is normally distributed.

2. Homogeneity Test

This homogeneity test was carried out using Fisher's test. The test criteria are that Ha is accepted if F2count <F2table at the significance level α = 0.05.

Table 5 Homogeneity Test Results

No.	Variants tested	Number of Samples	db	$F^2{}_{count}$	$F^2{}_{table}$	α (0.05)
1	Experiment	25				
2	Control	25	50	1,1	1,98	Homogeneous
	Amount	50				
	Significant level test requirements			$F^2{}_{count} \leq F^2{}_{table}$		

Data from homogeneity test calculations on N-Gain learning outcomes obtained Fcount = 1.1 and F2table = 1.84 at a significant level of α = 0.05. This it can be concluded that F2count ≤ F2table so it can be said that the variance distribution comes from a homogeneous group.

3. Research Hypothesis Testing

After the prerequisite tests are carried out, where the learning outcome data is declared normal and homogeneous, the next step is to submit a hypothesis. Proposing a hypothesis is carried out to find out whether the proposed null hypothesis (H0) is accepted or rejected. Proposing a hypothesis is as follows:

H0 : There is no effectiveness in using the STEM approach to learning using the PjBL method

Ha : There is effectiveness in using the STEM approach to learning using the PjBL method

Based on the data on the average N-Gain value of the Experimental group and the Control group, the t test results data are presented in the following table:

Table 6 Results of the t test for the average N-Gain for the experimental group and the control group

Group	N	Dk	*N-Gain*	t_{count}	t_{table}
Experiment	25	48	80	14	2,01174
Control	25		63		

Based on the calculation results, we get tcount of 14 with dk (degrees of freedom) of 48 (25 + 25 – 2), so we get ttable at a significant level α/2 = 0.05/2 = 0.025 of 2.01174. As for hypothesis testing using two-way testing, the testing criteria is that H0 is rejected if -2.01174> tcount >2.01174. The following are the curves for rejecting and accepting H0 in the Experimental group and the Control group.

C. Student Problem Solving Ability

After implementing STEM learning in the experimental class, students' problem solving abilities can be determined through a comparison of the results of the pretest and posttest assessments that have been carried out in both experimental and control groups. The recapitulation of pretest and posttest scores in the experimental and control groups is explained in the following table and histogram.

Table 7 Recapitulation of Average Scores for Experimental and Control Groups

Value Recapitulation		Class Group	
		Experiment	Control
Lowest Value	*Pretest*	45	40
	Posttest	80	75
	N-Gain	56	43
The highest score	*Pretest*	70	70
	Posttest	100	100
	N-Gain	100	100
Average value	*Pretest*	59	58
	Posttest	92	83
	N-Gain	80	63

Before STEM learning is implemented, the average student pretest score reflects the student's initial level of understanding. The pretest results show students' basic abilities in problem solving but with many shortcomings and inaccuracies. After students were exposed to STEM learning, the average posttest score increased significantly. The average student pretest score obtained from the experimental group was 59 and the control group was 58, this shows that both the experimental class and the control class were at levels that were not much different. The difference can be seen in the average posttest score in the experimental group with a score of 92 and the control group with a score of 83.

D. Student Responses

Students' responses to the science and science learning material on the role of society in overcoming environmental problems using a STEM approach were carried out by filling out response questionnaires by students. Data on the recapitulation of student response questionnaires are presented in the following table.

Table 8 Summary of Student Responses

No	Student	Qty	%	Predicate
1	THE	75	100	Very good
2	DMA	74	99	Very good
3	DS	74	99	Very good
4	CHORES	74	99	Very good
5	NOK	74	99	Very good
6	KT	74	99	Very good
7	MQS	74	99	Very good
8	MFR	73	97	Very good
9	MH	75	100	Very good
10	MLA	73	97	Very good
11	MAFJ	74	99	Very good
12	MASR	73	97	Very good
13	MDK	73	97	Very good
14	MFAH	74	99	Very good
15	MHS	74	99	Very good
16	MH	74	99	Very good
17	MLR	71	95	Very good
18	ME	74	99	Very good
19	MR	74	99	Very good
20	MRRA	75	100	Very good

No	Student	Qty	%	Predicate
21	MSA	73	97	Very good
22	NZ	75	100	Very good
23	SK	74	99	Very good
24	SFN	75	100	Very good
25	SNJ	74	99	Very good
Amount			2.463	
Predicate			98%	Very good

Based on the recapitulation table of student responses, an average score of 98% was obtained with a very good predicate. Based on the recapitulation table of student responses, it can be concluded that science learning material on the role of society in overcoming environmental problems using the PjBL method using a STEM approach is effective in increasing student interest.

FINDINGS AND DISCUSSION

The study found that after implementing STEM-based learning using the Pentahelix strategy, the experimental group's critical thinking and problem-solving skills improved significantly. The results are discussed below in terms of implementation, critical thinking, problem-solving skills, and students' reactions.

Implementation of STEM Learning
The experimental group demonstrated active engagement during STEM-based activities, including collaborative problem-solving tasks and real-world applications. Teachers used an interdisciplinary approach to balance STEM principles with practical problems related to environmental sustainability. Observations showed that students showed increased participation and collaboration, which was reflected in their ability to identify problems, gather information, and effectively propose solutions.

Critical Thinking Skills
Pre-test and post-test results showed a significant improvement in critical thinking skills within the experimental group. This group had an average N-gain score of 82, while the control group had an average N-gain score of 62. Students became better at critically reasoning, analyzing, and reflecting on problems, especially when applying scientific concepts to environmental problems. This result highlights the effectiveness of STEM learning in promoting higher order thinking.

Problem-Solving Skills
The experimental group showed a significant improvement in problem-solving skills, as evidenced by their ability to complete STEM-related tasks and present well-thought-out solutions. The mean post-test score increased from 59 (pre-test) to 92 (post-test), indicating a deeper understanding of STEM concepts and their real-life applications. Students participated in the co-development of solutions, reflecting an improved ability to methodically address complex problems.

Student Responses
Survey responses showed overwhelmingly positive student feedback towards the STEM-based learning approach. The mean response score of 98, categorised as "very good", indicates high levels of engagement and interest. Students reported that they enjoyed the hands-on and collaborative aspect of the learning model, which made them more motivated to actively participate in class.

Challenges and Changes
Despite overall success, there were initial challenges, such as difficulty adapting to the STEM framework, especially in the first few sessions. These were addressed through iterative modifications, such as simplified instructions, additional teacher guidance, and technology support. By the final session, both teachers and students demonstrated familiarity and proficiency in STEM activities.

Comparison with Previous Research
This result is consistent with previous research that has highlighted the effectiveness of STEM-based approaches in improving critical thinking and problem-solving skills. Studies by Kurniasih et al., for example, have shown that students are familiar with and proficient in STEM activities. (2021) highlighted similar improvements in students' conceptual understanding and engagement. Furthermore, this study

highlights the importance of the Pentahelix strategy in integrating multiple stakeholders to achieve educational goals.

CONCLUSION

1. The implementation of STEM approach learning in the experimental class is in the very good category. STEM learning is learning that actively involves students in finding solutions to real problems. Through various activities ranging from video analysis, discussions, to making and presenting simple water filter devices, students not only understand scientific concepts but also develop critical thinking, problem solving and collaborative skills.
2. Students' critical thinking abilities after implementing STEM learning have a significant impact in improving students' critical thinking abilities in science and science lessons regarding the role of society in overcoming environmental problems. This indicates that the application of STEM learning helps students develop their thinking abilities to face challenges in their daily lives.
3. Students' problem solving abilities after implementing STEM learning have a positive and significant impact on students' problem solving abilities. So it can be concluded that STEM learning is effective in improving students' problem solving abilities in overcoming environmental problems around them. So that STEM learning is effective in preparing students to become problem solvers and contribute positively to society and the environment in the future.
4. Students' responses to learning using the PjBL STEM approach method are very good, this is proven by the increasing interest of students in learning STEM, this can be seen from the assessment of the student interest questionnaire, all of which show very good scores so it can be concluded that students' responses to learning using the STEM approach Very good.

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