

# The Influence of Social-Emotional Learning (PSE) on Critical Thinking and Learning Achievement in Grade 5 Mathematics Subjects at SD Negeri Sidareja 01 Sidareja District

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## ABSTRACT

*Education is not only about mastering academic material but also about developing social and emotional skills essential for life success. This study aims to explore the influence of integrating social and emotional learning (SEL) on students' critical thinking and academic achievement. This research used a quasi-experimental method with a nonequivalent control group design. The subjects were 5th-grade students at SD Negeri Sidareja 01. The analysis results showed that social and emotional learning (SEL) had a significant positive impact on improving critical thinking skills and academic achievement in Mathematics. The experimental class following the SEL method demonstrated a higher increase in posttest scores compared to the control class. Statistical tests indicated that the data did not follow a normal distribution, but the variance between groups was homogeneous. Therefore, this study supports the hypothesis that SEL positively influences students' critical thinking and academic achievement.*

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## 1. INTRODUCTION

Education is not only about mastering academic materials, but also about developing social and emotional skills that are essential for life success. One of the important aspects of student development is their sense of confidence. This study aims to explore the influence of the integration of social and emotional learning on critical thinking and student learning achievement (Allo et al. 2024).

Social-emotional skills are critical for students, citizens, and job seekers. The demands of today's world of work, which we know as the 21st century, have implications in the world of education into 21st century skills, student-centered learning, and individual needs. Students' learning abilities go well, not only depending on the teacher's instructions, but also factors such as the school environment, sense of belonging, positive relationships with teachers, and the feedback students receive (Widiastuti 2022).

The results of PISA 2018 (Ministry of Education and Culture, 2021) reported that 41% of Indonesian students experienced bullying several times a month, higher than the average of OECD (*Organisation for Economic Co-operation and Development*) countries. Students who were often bullied had a lower score of 21 in reading. Students who experience bullying also often feel sad, scared, dissatisfied with their lives, and have a tendency to skip school.

Mathematics, as a subject taught in schools, plays an important role in dealing with both science and technology. Mathematics has a great potential that can equip students to face competition. The magnitude of the

role of mathematics as a basic science can be seen in the large demands of mathematical skills that must be possessed, especially in facing the 21st Century. Mathematics learning in this century is required to emphasize the four aspects above as skills that must be possessed in the 21st century (Dwi Rahma Putri et al. 2022).

Improving critical thinking skills is an important need in learning mathematics in the digital era. Project-based math learning approaches have been identified as an effective method to achieve this goal, especially when applied in an environment (Mecka 2023). Social-emotional skills are critical for students, citizens, and job seekers.

The demands of today's world of work, which we know as the 21st century, have implications in the world of education into 21st century skills, student-centered learning, and individual needs. Students' learning ability goes well, not only depends on the teacher's instructions, but also factors such as the school environment, sense of belonging, positive relationships with teachers, and the feedback students receive. Neuroscience research shows that emotions and cognition are interconnected and even inseparable.

Emotions and cognition are important for everyone in order to understand, organize, and make connections even on "pure" academic concepts. Deviant behaviors such as drug use, violence, bullying, and *dropout* can be reduced or prevented through social and emotional skills that can be done through effective classroom instruction, student involvement in positive activities inside and outside the classroom, and the role of parent communities in planning, implementation, and evaluation.

Social and emotional learning is based on the fact that it is not enough for students to only learn and develop their academic abilities in the learning process. Each student is also expected to develop a social and emotional dimension. Based on the results of the study, it shows that social-emotional skills play a significant role in academic success and individual life. As an educator who is in direct contact with students in the educational environment, we can see the low motivation of students to learn as a result of the lack of implementation of social-emotional learning carried out in the classroom.

Social-emotional learning (PSE) is a learning activity that helps children develop the social and emotional skills necessary for success in life. PSE includes four main skills, namely self-awareness, emotional regulation, social skills, and social responsibility. In the context of education, PSE can help increase children's motivation to learn in elementary school. A child can learn best if their physical needs are met and they feel safe and comfortable psychologically.

In the context of this study, the observed phenomenon is centered on the development of grade 5 students at SD Negeri Sidareja 01 in three key aspects: social-emotional learning (PSE), critical thinking, and their learning achievement in Mathematics subjects. Students at this stage not only face academic challenges in understanding the Maths material but also develop in terms of their social and emotional skills. Social-emotional learning (PSE) refers to how students understand and manage their own emotions, interact with others, and build positive relationships.

Critical thinking is the ability to ask questions, evaluate information, and make decisions based on deep analysis. Learning achievement, especially in Mathematics subjects, is the main benchmark for students' academic progress. An interesting phenomenon to study is how social-emotional learning affects students' development of critical thinking and, consequently, their learning achievement in Mathematics.

Students who have good social and emotional abilities may be better able to overcome learning barriers, collaborate with teammates, and manage stress, all of which are important factors in achieving academic success. In addition, there is a question of whether an increase in critical thinking will have a direct impact on students' Math learning achievement, given that Math is a subject that requires deep problem-solving and analytical thinking.

In the context of research on the influence of Social Emotional Learning (PSE) on critical thinking and student learning achievement in Mathematics at SD Negeri Sidareja 01, the aspect of learning achievement has a broad and relevant dimension. The first aspect to consider is the intellectual ability of the student. Their intellectual abilities play a crucial role in their ability to understand, analyze, and apply the mathematical concepts taught.

In addition, the cognitive strategies they use are also an important factor. Students who have effective cognitive strategies will be better able to overcome learning barriers and develop a deep understanding of the subject matter. Verbal information also becomes relevant in this context, as students' ability to understand, use, and convey information verbally affects their ability to understand clues, explain problem-solving, and communicate well.

Finally, students' attitudes and skills, such as motivation, perseverance, and communication skills, also contribute to their learning achievement in mathematics. A positive attitude towards math learning and the skills to communicate and collaborate effectively will support students in achieving academic success. Therefore, a deep understanding of how Social-Emotional Learning affects the development of these aspects will provide valuable insights into the relationship between social-emotional learning and student learning achievement in the specific context of mathematics learning at SD Negeri Sidareja 01.

Overall, the phenomenon that occurred in the object of the research, namely grade 5 students at SD Negeri Sidareja 01, was how the interaction between social-emotional learning, critical thinking, and their learning achievement in Mathematics subjects. Through this study, it is hoped that it can be understood more deeply how these factors are interrelated and how a learning approach that emphasizes PSE can improve students' critical thinking skills and learning achievement in Mathematics.

## 2. METHOD

The type of research used is quasi-experimental research. Quasi-experimental research is a way to find a causal relationship between two factors that are deliberately caused by researchers by reducing or excluding other interfering factors (Mertayasa, 2021:301-308). Quasi experimental research is a research intended to find out whether there is a consequence of "something" imposed on the subject of the investigation.

The quasi-experimental research method is an experimental method to study the influence of certain variables on other variables, through experiments under special conditions that are deliberately created. According to Sugiyono (2015: 114) *quasi-experimental* research is "research that has a control group, but cannot fully function to control external variables that affect the implementation of experiments". The form of *quasi-experimental* design used is to use a *nonequivalent control group design*, which is a quasi-experimental design by looking at the difference *between the pretest and posttest* between the experimental class and the control class that are not randomly selected.

At the implementation stage, a pretest is carried out to measure students' initial abilities. The experimental group followed the PBL method for 8 weeks, while the control group used the conventional method. Posttest is carried out to measure the final ability of students. In the data analysis stage, pretest and posttest data were analyzed using descriptive and inferential statistics. The t-test was used to determine the difference in pretest and posttest scores between the experimental and control groups

## 3. RESULTS AND DISCUSSIONS

Based on the descriptive statistical table provided, we can draw several conclusions related to the thesis title "The Influence of Social Emotional Learning (PSE) on Critical Thinking and Learning Achievement in Grade 5 Mathematics Subjects at SD Negeri Sidareja 01, Sidareja District."

**Table 1.**

	N	Minimum	Maximum	Mean	Std. Deviation
PreEks	23	30.00	70.00	45.2174	13.77401
PostEks	23	60.00	100.00	85.2174	10.81647
PreKon	20	20.00	70.00	45.0000	12.35442
PostKon	20	50.00	90.00	68.0000	9.51453
Valid N (listwise)	20				

The mean pretest scores for the experimental class (45.2174) and the control class (45.0000) were very close, suggesting that before the PSE intervention, the initial abilities of the two groups were relatively the same. A sizable standard deviation indicates that there is a variation in values within these groups. The average posttest score for the experimental class increased significantly to 85.2174, compared to the pretest score. This shows that PSE intervention has a great positive influence on students' learning achievement and critical thinking skills.

The control class also showed an increase in the average posttest score (68.0000), but not as much as the increase that occurred in the experimental class. This suggests that despite the improvement, the effect is not as strong as in the experimental class that received the PSE intervention. Smaller standard deviations on the posttest in both the experimental and control classes showed that the students' grades after the intervention became more homogeneous.

Based on the above data, it can be concluded that Social Emotional Learning (PSE) has a significant influence on improving critical thinking skills and learning achievement in grade 5 Mathematics at SD Negeri Sidareja 01, Sidareja District. A higher average increase in scores in the experimental class compared to the control class indicates the effectiveness of the PSE intervention.

The normality test was carried out to see if the pretest and posttest score data from the experimental and control classes were normally distributed. In this test, two methods were used: Kolmogorov-Smirnov and Shapiro-Wilk. Here are the results of the normality test:

**Table 2. Tests of Normality**

Class	Kolmogorov-Smirnova	Shapiro-Wilk
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		<b>Statistic s</b>	<b>Df</b>	<b>Sig.</b>	<b>Statistic s</b>	<b>Df</b>
Learning Outcomes	Pretest Experimental Class	.256	23	.000	.862	23
	Posttest Experimental Classes	.207	23	.012	.898	23
	Control Class Pretest	.257	20	.001	.918	20
	Posttest Control Class	.283	20	.000	.876	20

Kolmogorov-Smirnov Test:

Kolmogorov-Smirnov Test: All Sig. (p-values) were less than 0.05 for both pretest and posttest in both experimental and control classes. This indicates that the data is not normally distributed. Shapiro-Wilk Test: Similar to the Kolmogorov-Smirnov test, all Sig. (p-values) less than 0.05, confirming that the data are not normally distributed.

The homogeneity test was carried out to see whether the variance between the groups in this study was the same or not. The following are the results of the homogeneity test using Levene statistics. Since all Sig. values are greater than 0.05, we can conclude that the variance of the pretest and posttest data in the experimental and control classes is homogeneous. This indicates that the assumption of variance homogeneity has been met, so that we can proceed with the next statistical analysis with more confidence.

With these results, it can be concluded that the social-emotional learning (PSE) method applied in this study has equivalent conditions in terms of value variance, both in the experimental and control classes. This ensures that the differences in outcomes observed after the PSE intervention are more likely to be due to the effects of the intervention itself, rather than by differences in variance between groups.

The statistical results of the paired samples provide an overview of the pretest and posttest data from the experimental and control classes. The following is a summary of the data obtained from SPSS:

**Table 3.**

		<b>Mean</b>	<b>N</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Pair 1	PreEks	45.2174	23	13.77401	2.87208
	PostEks	85.2174	23	10.81647	2.25539
Pair 2	PreKon	45.0000	20	12.35442	2.76253
	PostKon	68.0000	20	9.51453	2.12751

In this study, statistical analysis of paired samples was carried out to measure the influence of Social Emotional Learning (PSE) on critical thinking and learning achievement in grade 5 Mathematics at SD Negeri Sidareja 01, Sidareja District. The statistical results of the paired sample show the following information:

In the experimental class, the number of samples measured was 23 students. The standard deviation of the pretest value is 13.77401 with a standard error mean of 2.87208, while the standard deviation of the posttest value is 10.81647 with a standard error mean of 2.25539. This shows that there is a significant variation in values before and after the implementation of PSE, but the posttest values tend to be more homogeneous with a lower standard deviation than the pretest.

In the control class, the number of samples measured was 20 students. The standard deviation of the pretest value is 12.35442 with a standard error mean of 2.76253, while the standard deviation of the posttest value is 9.51453 with a standard error mean of 2.12751. It also shows that there is a significant variation in scores before and after the implementation of conventional learning, with posttest scores tending to be more homogeneous than pretest.

#### 4. CONCLUSIONS

Based on the statistical results of the paired sample, we can conclude that the application of Social Emotional Learning (PSE) has a positive influence on students' critical thinking skills and learning achievement. The standard deviation from pretest to posttest in the experimental class was reduced, which indicates that students' grades became more consistent after the implementation of PSE. The standard error mean decreased from pretest to posttest in the experimental class, which shows that the average estimate becomes more accurate after the application of PSE.

Thus, these results support the hypothesis that Social Emotional Learning (PSE) has a positive effect on students' critical thinking skills and learning achievement in grade 5 Mathematics at SD Negeri Sidareja 01, Sidareja District. The decrease in standard deviation and standard error mean indicates that students benefit from this learning more evenly, thereby increasing the consistency and accuracy of their learning achievement.

**Suggestion**

Schools and teachers are advised to implement social-emotional learning models to improve student learning outcomes. Teachers need to receive special training and assistance in order to carry out this learning effectively. Further research is needed to test the effectiveness of this model on a variety of subjects and different levels of education. In addition, it is recommended to develop more varied and comprehensive research instruments to measure other aspects of student learning outcomes.

**REFERENCES**

- Allo, Karisma Tiku, Saruawan, Irianto Sara, and Erniati Marampa. 2024. "Integrating Social and Emotional Learning to Increase Student Confidence in the Classroom." *Journal of Education and Teacher Training* 2(2): 423–32.
- Dwi Rahma Putri, Riska, Titik Ratnasari, Desnia Trimadani, Halimatussakdiah Halimatussakdiah, Elvira Nathalia Husna, and Winarni Yulianti. 2022. "The Importance of 21st Century Skills in Mathematics Learning." *Science and Education Journal (SICEDU)* 1(2): 449–59.
- Mecka, K A. 2023. "Improving Critical Thinking Skills Through a Project-Based Mathematics Learning Approach in an Online Environment." *World Journal of Science* 4(4): 1–21. <http://duniailmu.org/index.php/repo/article/view/228>.
- Widiastuti, Sussi. 2022. "Social-emotional learning in the educational domain: implementation and assessment." *JUPE : Mandala Education Journal* 7(4): 964–72.