Didaktika: Jurnal Kependidikan, Vol. 13, No. 1, Februari 2024

The Effect of the PBL Model on Critical Thinking Ability and Mathematics Learning Achievement of Class V Students of SDN Anggrek Cluster

Usman[1], Mery Noviyanti[2], Erwin[3]
[1,2,3] Universitas Terbuka, Indonesia

[1]usmantika82@gmail.com

Abstract

The purpose of this research is to compare the results of students who use traditional methods of instruction with those who use the problem-based learning (PBL) approach to math education in order to draw conclusions about the relationship between the two. The research method uses experimental quasi. The study population was 159 learners, with a research sample of 22 learners. The instruments used are educator activity observation sheets, student activity observation sheets, questionnaires on applying PBL models, critical thinking ability tests, and learning achievement tests. Data analysis using the T-test. The results of the first hypothesis obtained by Sig. (2-tailed) were 0.00 ≤ 0.05, the average value of applying the experimental class PBL model was 78.23, the standard deviation was 11.936, the average control class was 5.025, the standard deviation was 5.025, and Sig obtained the second hypothesis. (2-tailed) was 0.00 ≤ 0.05, the average value of critical thinking of the experimental class was 82.95, the standard deviation was 13.062, and the average critical thinking of the control class was 58.00, the standard deviation was 11.940, the third hypothesis obtained by Sig. (2-tailed) is 0.00 ≤ 0.05, the average value of experimental class learning achievement is 83.64, the standard deviation is 11.871 and the average learning achievement of the control class is 59.14, the standard deviation is 11.107, the fourth hypothesis is obtained the significance value of applying the PBL (X) model of 0.001 < 0.05 and the calculated value of 3.987 > table of 1.720, critical thinking significance value (Y1) of 0.000<0.05 and calculated value of 8.337>table of 1.720, and learning achievement significance value (Y2) of 0.000 < 0.05 and calculated value of 8.337 > table of 1.720. then it can be concluded that the PBL learning model on critical thinking skills and mathematics learning achievement differs.

Keywords: *Problem-Based Learning, critical thinking, learning achievement*

Introduction

The exponential growth of knowledge made possible by technology in the twenty-first century (Khotimah, 2019). Any and all parts of life might be affected by this. Every Indonesian is entitled to receive and is required to continuously improve their education since education is the most essential thing in human existence (Alpian et al., 2019). Knowledge is eternal. Being educated is crucial because education, in general, is seen as a lifelong process in which each person develops (Kamaludin, 2019).

One of the things that helps people grow intellectually is education, which is why it is crucial for a nation's development (Normina, 2017). Through a quality education system, quality human resources will also be produced. Law 23 of 2003 states that education is an intentional and purposeful endeavor to provide students with the knowledge, skills, character traits, intelligence, and expertise that they, their nation, and their fellow citizens will need in order to live a life of faith and self-control. As an institution trusted to instill cognitive education for students, schools have a great responsibility to provide education to students so that students can find their

potential and develop it optimally (Alfiyanto et al., 2022). The educational process should facilitate students in increasing piety and cultivating noble character and personality in students (Udin et al., 2022).

Mathematics is a very important subject with the potential to develop intelligence. Mathematics is one of the subjects studied at every level of education, which is expected to train students to think practically, critically, creatively, and systematically in acting (Musna & Juandi, 2020). However, in another part, teachers in this condition are mathematics teachers, expected to be able to reduce students' early assumptions that mathematics is a difficult subject. This assumption is not free from the growing assumptions among citizens about mathematics. The assumption of many people that difficult mathematics lessons without being noticed has co-opted the minds of teaching participants. As a result, the teaching participants also thought so when they were close to mathematics. The idea that mathematics is a dry, abstract, theoretical science full of symbols and methods that are difficult and confusing also assumes students learn mathematics (Gazali, 2016).

Great ability in mathematics lies in its ability to train people's thinking power. Thinking is a psychological activity a person feels when faced with a problem or atmosphere that must be solved. Teachers must recognize teaching participants' characteristics to provide good and appropriate coaching regarding the progress of assuming elementary or MI students. So when a person formulates a problem, dismantles a problem, or wants to master something, it is to assume until he carries out an activity. Thinking is a psychological skill divided into several types, including reasonable, analytical, critical, and innovative (Hidayati, 2017). Every learning can be said to be good if it has one indicator that can make students practice independently, actively, and think critically. It is the role of teachers to guide students so that they can become innovative, active, and competitive individuals. It has become the role of a teacher to produce teaching participants so that their students can have expertise in affective, cognitive, and psychomotor views that are superior and have personality.

The ability to solve problems in mathematics learning with critical thinking skills in students is still very weak. With the increase in literacy and numeracy competence, the quality of education in Indonesia is expected to improve. One of the things being studied by the Ministry of Education and Culture is the improvement of the assessment system, where assessments need to be made to focus on fundamental competencies that are widely useful. Based on the Programme for International Student Assessment (PISA) study results in 2018, Indonesia's PISA ranking fell to 74th out of 79 countries, compared to Indonesia's PISA in 2015. This study compared each child's math, reading and science performance (Tohir, 2019).

Globalization demands a paradigm shift in education to improve its quality to compete with other countries. Achieving this requires high-level thinking skills (critical and innovative) and the ability to solve problems and work collaboratively. Critical and innovative thinking skills are competencies that must be possessed by all people, including students in elementary schools (Wahyudi et al., 2018).

The ability needed in the process of understanding mathematical concepts is the ability to think critically about mathematics. The ability to think mathematically, which involves doing math (mathematical activities), needs special attention in learning mathematics to understand mathematical concepts. The need for critical thinking skills is one of the goals of learning mathematics in schools. In everyday life, we are always faced with various problems related to the ability to think critically and mathematically. The problem is, of course, not all mathematical problems. Still, mathematics has an important role in solving everyday problems, which can be solved through mathematics, specifically critical thinking skills. For example, mathematical

problems related to buying and selling, estimating profits, calculating the number of ceramics needed to cover a floor, and calculating building area and land.

Instilling critical thinking abilities in students helps ensure that the next generation is well-equipped to lead the country to prosperity. The goal of incorporating models into scientific lessons is to foster students' capacity for critical thinking (Satria, 2019). A student's learning accomplishment is the transformation they undergo as a result of going through the learning process and accomplishing the learning objectives by their own activities. In most cases, this shift may be seen across several domains in pupils, including cognitive, emotional, and psychomotor, depending on whether the outcomes are amenable to assessment by means of tests or direct observation. Several things affect student learning outcomes, including the amount of effort, the intelligence of students, and opportunities given to children if the three subjects can be combined properly so that the results of practice achieved by students will be very relieved for them, teachers, and parents (Pratiwi, 2017).

Evidence to determine students' success in the learning process or students' efforts during learning can be known from student learning achievements (Arista & Marhaeni, 2018). The level or level of success of students in conducting learning in the classroom is obtained from student learning achievement expressed in the form of scores about the materials that have been learned. These learning achievements are obtained through evaluations or tests proven by teachers to students after the learning implementation process (Aryanthi et al., 2019).

Learning activities in grade V of SDN Anggrek Cluster in Buay Madang Timur District have implemented the 2013 revised 2018 Curriculum. This is based on the results of observations made by researchers, namely through interviews with educators in all educational units of SDN Anggrek Cluster in Buay Madang Timur District. Information was obtained that students have been introduced to learner-centered learning in learning mathematics. The reality in the field proves that critical thinking skills in grade V students of SDN Anggrek Cluster in Buay Madang Timur District are very far from the dreams teachers desire. Learning is passive; students are not active, and there is no exciting learning atmosphere. As a result, the way of learning mathematics that is informed does not match the results obtained by students. There are still very few problems and replies from students with critical thinking skills. Students only respond without any description of the description they have. As a result, the reply seems short and does not meet the High Instruction Thinking Skills (HOTS) criteria. The instruments handed over to students do not lead to C4, C5, and C6 levels, so students cannot respond to questions with that type of HOTS.

The process of learning and teaching in the classroom is often directed to the child's ability to memorize, and children always get the concept of learning to remember and hoard various knowledge, information, and things that are beyond their ability without being required to understand the information to be connected with real everyday life. Facts and data in the field show that students cannot answer questions with categories C4, C5, and C6 (HOTS questions). Conversely, few students can do questions categorized as C1, C2, and C3. This is related to the teacher's ability to choose an approach that requires students to be able to answer these questions. Therefore, the teaching and learning process requires a model to direct students to think critically in answering the questions.

Learning models that are thought to affect students' critical thinking skills in mathematics learning are learner-centered learning models or *student-centered* learning, learning models that provide authentic experiences that will encourage students to learn actively to understand problems in everyday life to be able to find solutions. The goal of the problem-based learning (PBL) paradigm is to help students hone their critical thinking and problem-solving abilities by exposing them to real-world problems (Harapit, 2018).

In principle, the PBL model requires students to be responsible and independent and can encourage students to learn to integrate and organize the information obtained so that they can apply it in solving problems that will be faced so that students can think critically, especially in improving learning achievement by following the development of the 21st century. The demands of quality education, always innovating and changes in learning models need to be an interesting study, so this study leads to the curiosity of researchers to conduct research related to the *Problem-Based Learning* (PBL) model on critical thinking skills and learning achievement in grade V mathematics learning at SDN Anggrek Cluster in Buay Madang Timur District, Ogan Komering Ulu Timur Regency.

The problems that are the focus of the research are (1) how to apply the PBL model in mathematics learning to grade V students of SDN Aggrek Cluster in Buay Madang Timur District, (2) Does the PBL approach have an effect on students' critical thinking abilities compared to more traditional methods of instruction in the fifth grade at SDN Anggrek Cluster in Buay Madang Timur District, (3) evaluate the effectiveness of project-based learning (PBL) compared to more traditional methods of instruction in improving students' academic performance in the fifth grade at SDN Anggrek Cluster in Buay Madang Timur District, (4) found that fifth graders at SDN Anggrek Cluster in Buay Madang Timur District improved their critical thinking abilities and maths test scores after using the project-based learning (PBL) approach.

Method

This type of research is quantitative research, quasi-experiments using randomly determined groups, experimental classes using Problem-Based Learning, and control classes using conventional. The population was 159 students in class V, while the sample of students at SDN Tanjung Mas was class 5A as the treatment class 5B as the control class. The instruments in this study are observation sheets of educator implementation, observation of student implementation, critical thinking ability tests, and learning achievement tests. Validity testing uses product-moment correlation, testing the validity of research instruments to obtain instruments with valid criteria. This instrument test was conducted at SD Negeri Cluster Anggrek with 22 respondents. The following are the validity test results from the questionnaire using the use of problem-based Learning (PBL) models, and the results of the validity test of mathematics test questions to test the instrument's reliability is said to be reliable if the reliability coefficient of Cornbach's alpha > 60.

Results

The t-test on applying the PBL model in this study is to see students' responses after learning to use the PBL model. It aims to see the research results using PBL, providing significant results for mathematics learning.

Testing the Application of PBL Models in Mathematics Learning

The following table displays the results of a t-test study on the implementation of the PBL paradigm in mathematical courses.

Table 2. Test Results t

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Say.	t	Df		Std. Error	95% Confidence Interval of the Difference

						Sig. (2-tailed)	Mean Difference	Difference	Lower	Upper
Results-questionnaire	Equal variances assumed	12.940	.001	6.338	42	.000	17.500	2.761	11.928	23.072
	Equal variances are not assumed.			6.338	28.218	.000	17.500	2.761	11.846	23.154

Data source: processed SPS.22 output, 2023

The findings of the t-test calculation indicate that there is a difference between the experimental and control courses in mathematics learning, since the value of Sig. (2-tailed) is 0.00 ≤ 0.05. For a more detailed look at the average PBL questionnaire test results for the control and experimental groups, refer to the statistical table that follows.

Table 3. Descriptive Statistical Results

Group Statistics

	Class	N	Mean	Std. Deviation	Std. Error Mean
Results-questionnaire	Experiment	22	78.23	11.936	2.545
	Control	22	60.73	5.025	1.071

Data source: processed SPS.22 output, 2023

According to the descriptive statistics shown above, the control class had an average of 5.025 with a standard deviation of 5.025, while the experimental class PBL model had an average of 78.23 with a standard deviation of 11.936. There is a notable contrast between the two groups in the experimental and control groups.

Differences in Students' Critical Thinking Ability Based on PBL Model with Conventional Learning Model

The following table displays the results of a t-test comparing students' critical thinking abilities when taught using the PBL paradigm to more traditional methods of instruction.

Table 4. T-test analysis of differences in critical thinking skills

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Say.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Critical thinking outcomes	Equal variances assumed	.015	.904	6.614	42	.000	24.955	3.773	17.340	32.569
	Equal variances are not assumed.			6.614	41.666	.000	24.955	3.773	17.338	32.571

Data source: processed SPS.22 output, 2023

The aforementioned t-test findings show that the value of Sig. (2-tailed) is 0.00 < 0.05, indicating that students taught using the PBL paradigm have significantly better critical thinking skills than those taught using traditional learning methods. See the data table below for a more in-depth look at how students' critical thinking skills compared when taught via PBL vs more traditional methods.

Table 5. Descriptive Statistical Results Differences in Critical Thinking Skills

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Critical thinking outcomes	Experiment	22	82.95	13.062	2.785
	Control	22	58.00	11.940	2.546

Data source: processed SPS.22 output, 2023

The results of the descriptive statistical analysis above showed the average value of the experimental class was 82.95, the standard deviation was 13.062, and the average critical thinking of the control class was 58.00, the standard deviation was 11.940. This showed a significant difference.

Differences in Learning Achievement Ability of Students Taught with the PBL Mode Conventional Learning Model

The following table displays the results of a t-test comparing the accomplishment abilities of students taught using the PBL paradigm to those taught using more traditional learning approaches.

Table 6. T-test analysis of differences in learning achievement ability

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Say.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Study performance	Equal variances assumed	.022	.884	7.069	42	.000	24.500	3.466	17.506	31.494
	Equal variances are not assumed.			7.069	41.816	.000	24.500	3.466	17.505	31.495

Data source: processed SPS.22 output, 2023

From the t-test findings shown above, where the Sig. (2-tailed) value is 0.00 < 0.05, we may deduce that students taught using the PBL model outperform those taught using traditional learning methods when it comes to their capacity to learn. You may see the average learning accomplishment ability of students taught using the PBL model compared to those taught using traditional learning models in the statistics table below.

Table 7. Results of Descriptive Statistical Analysis of differences in learning achievement

Group Statistics

	Group	N	Mean	Std. Deviation	Std. Error Mean
Study performance	Experiment	22	83.64	11.871	2.531
	Control	22	59.14	11.107	2.368

Data source: processed SPS.22 output, 2023

Comparing the experimental and control classes, the descriptive statistics revealed that the former had an average learning accomplishment of 83.64 with a standard deviation of 11.871, whereas the latter had an average of 59.14 with a standard deviation of 11.107. There was a noticeable change.

The Effect of the Application of PBL Models on Critical Thinking Skills and Mathematics Learning Achievement

The t-test findings on the impact of the PBL paradigm on students' critical thinking abilities and mathematical proficiency. Here is the table you requested.

Table 8. T-test analysis of the Effect of applying PBL models on critical thinking skills and mathematics learning achievement

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Results of the application of PBL mathematics	15.727	18.501	3.945	7.524	23.930	3.987	21	.001
Pair 2	Results of Critical thinking	27.227	15.319	3.266	20.435	34.019	8.337	21	.000
Pair 3	Performance Outcomes Study	27.227	15.319	3.266	20.435	34.019	8.337	21	.000

Data source: processed SPS.22 output, 2023

Based on the results of the t-test calculation above, the significance value of applying the PBL (X) model was 0.001 < 0.05, and the calculated value was 3.987 > table of 1.720. The significance value of critical thinking (Y1) was 0.000 < 0.05. The calculated value was 8.337 > t-table was 1.720, and the significance value of learning achievement (Y2) was 0.000 < 0.05, and the calculated value was 8.337 > ttable was 1.720. then it can be concluded that the PBL learning model on critical thinking skills and mathematics learning achievement is significant.

Discussion

The results of the analysis of the influence of Problem-Based Learning (PBL) on critical thinking skills and mathematics learning achievement of grade V students of SDN in the Orchid Cluster of Buay Madang Timur-OKU Timur descriptively using table analysis or statistical analysis can be explained below.

Results of the First Hypothesis Analysis

The significance values (two-tailed) achieved by applying the Problem-Based Learning (PBL) model to mathematics education are 0.00 ≤ 0.05, according to descriptive statistics and statistical analysis of t-tests. The results demonstrate that the experimental group outperformed

the control group in mathematics; the experimental group average was 78.23, while the control group average was 60.73; and the experimental group's standard deviation was 11.936, while the control group's was 5.025.

Students' mathematical growth is positively and significantly impacted by the Problem-Based Learning paradigm. This is how Dakabesi and Lause see the impact of the Problem-Based Learning paradigm on analytical reasoning skills as it pertains to the speeds of chemical reactions. Higher levels of academic achievement were associated with improved pupils' critical thinking abilities, according to the research (Dakabesi & Luoise, 2019).

Students must grasp multiple scientific concepts in a condensed period of time, and the Problem-Based Learning (PBL) model emphasises the importance of student-to-student and teacher-to-resource interactions in helping students achieve their learning goals. Educators propose lessons in which students work together to find solutions. Students must learn to effectively communicate and work together in order to succeed using this approach. The above discussion lends credence to the hypothesis that Problem-Based Learning (PBL) is very effective in enhancing the mathematics education of fifth graders in the Anggrek Cluster of Buay Madang Timur - East OKU.

Results of the Second Hypothesis Analysis

A statistical analysis was conducted using t-tests and descriptive statistics to compare the critical thinking abilities of students taught using the Problem-Based Learning (PBL) model to those taught using conventional learning models. The results showed that there was a significant difference in the skills of the two groups, with Sig. (2-tailed) scores ranging from 0.00 ≤ 0.05. Comparing the experimental and control classrooms, we find that students taught using the PBL paradigm had an average critical thinking capacity of 82.95, whereas students taught using traditional methods had an average of 56.00. Also, although the control group had a standard deviation of 11.940, the experimental group had a standard deviation of 13.062.

This demonstrates how proficiency in critical thinking affects success in mathematical education. One of the goals of education should be to help students develop the competence of critical thinking, which is an essential skill for building knowledge. Ability to think critically Learning requires students. Thinking critically may assist with problem-solving, decision-making, and satisfying one's natural curiosity. The capacity to think critically entails delving thoroughly into a topic, analysing it, and drawing conclusions based on those conclusions, as well as making comparisons and judgements based on the information one has acquired.

In other words, students with high critical thinking skills will be better prepared to accept mathematics subjects, resulting in good learning achievement. Conversely, students with low critical thinking skills who learn mathematics will also get low learning achievement. Based on everything we've covered so far, we can accept the premise that fifth graders at SDN in the Orchid Cluster of Kec. Buay Madang Timur-OKU Timur benefit greatly from developing their critical thinking skills in order to improve their mathematical knowledge.

Results of the Third Hypothesis Analysis

The statistical analysis of t-tests and descriptive statistics reveals that there are significant differences in the learning achievement of students taught using the Problem-Based Learning (PBL) model compared to students taught using conventional learning models. The value of Sig. (2-tailed) is 0.00 ≤ 0.05, indicating this. The experimental group had an average learning achievement ability of 83.64, while the control group had an average of 59.14; the experimental group also had a standard deviation of 11.871, while the control group had a standard deviation of 11.107. The PBL group was compared to the conventional model.

Evidently, if the Problem-Based Learning (PBL) approach to education is enhanced, students will be able to attain higher levels of success in mathematics and other subject areas. Students who have strong critical thinking skills will more easily understand mathematics lessons. Conversely, for students who do not pay attention to critical thinking, it will be difficult to understand mathematics lessons, and learning achievement is also low. Likewise, students who can think critically are then seriously and earnestly will easily accept and learn mathematics lessons so that they will also be able to obtain satisfactory learning achievements. Meanwhile, students with low critical abilities will find it difficult and not ready to accept and learn mathematics lessons and will have disappointing learning achievements. Based on everything we've covered so far, we can accept the premise that fifth graders at SDN se-Anggrek Cluster Kec. Buay Madang Timur-OKU Timur benefit significantly from Problem-Based Learning and develop their critical thinking skills in relation to their mathematical proficiency.

Results of the Fourth Hypothesis Analysis

Based on the results of the t-test calculation and descriptive statistical results, the significance value of the application of the PBL (X) model was 0.001 < 0.05. The calculated value was 3.987 > t-table of 1.720, the significance value of critical thinking (Y1) was 0.000 < 0.05, the calculated value was 8.337 > ttable was 1.720, and the significance value of learning achievement (Y2) was 0.000 < 0.05. The calculated value was 8.337 > ttable was 1.720, and then it can be concluded that the PBL learning model on critical thinking skills and mathematics learning achievement is significant. The hypothesis obtained from the discussion above is that there is a significant influence between Problem-Based Learning on the ability to think critically and the achievement of mathematics learning students in grade V SDN se-Cluster Anggrek Kec. Buay Madang Timur-OKU Timur is acceptable.

Conclusion

This research explored the impact of Problem-Based Learning (PBL) on students' reactions, critical thinking abilities, and mathematical learning outcomes, employing a control group design with pretests and posttests. The study involved two groups: one experienced the PBL approach, while the other underwent traditional learning methods. Data were gathered through questionnaires, critical thinking, and academic tests, analyzed using an independent t-test. Findings revealed significant differences favoring the PBL group over the conventional group in three key areas: 1) Student reactions to the learning process were more positive in the PBL group. 2) Critical thinking skills were notably higher among students taught with PBL. 3) Mathematical learning outcomes were superior for students engaged in PBL. These results underscore PBL's effectiveness in enhancing student engagement, critical thinking, and academic achievement in mathematics, suggesting its potential as a superior alternative to traditional educational methods in promoting higher standards in mathematics education.

References

Alfiyanto, A., Ibrahim, I., Mustika, A., & ... (2022). Pelaksanaan Bimbingan Konseling Dalam Membentuk Kecerdasan Spiritual Siswa. *Edumaspul: Jurnal …*. https://ummaspul.e-journal.id/maspuljr/article/view/3072

Arista, L. D., & Marhaeni, S. S. (2018). Pengaruh Pemanfaatan Media Pembelajaran Terhadap Tingkat Keberhasilan Belajar Siswa Mata Pelajaran PKn Siswa Kelas XI Multimedia Semester Ganjil SMK Muhammadiyah 1 Genteng Tahun Pelajaran 2016/2017. *JPPKn (Jurnal Ilmiah Pendidikan Pancasila Dan Kewarganegaraan).*

Aryanthi, K. D., Suwatra, I. I. W., & Suarjana, I. M. (2019). Pengaruh Model Pembelajaran Air

Berbantuan Media Gambar Terhadap Hasil Belajar IPS Siswa. *Media Komunikasi FPIPS*. https://doi.org/10.23887/mkfis.v17i1.22215

Dakabesi, D., & Luoise, I. S. Y. (2019). The effectiveness of problem-based learning model to increase the students' critical thinking skills. *Journal of Education and Learning (EduLearn)*. https://doi.org/10.11591/edulearn.v13i4.12940

Gazali, R. Y. (2016). Pembelajaran Matematika Yang Bermakna. *Math Didactic*, *2*(3), 181–190. https://doi.org/10.33654/math.v2i3.47

Harapit, S. (2018). Peranan Problem Based Learning (PBL) Terhadap Kemampuan Pemecahan Masalah dan Motivasi Belajar Peserta Didik. *Jurnal Pendidikan Tambusai*, *2*(4), 912–917.

Hidayati, A. U. (2017). Melatih keterampilan berpikir tingkat tinggi dalam pembelajaran matematika pada siswa sekolah dasar. *Pendidikan Dan Pebelajaran Dasar*, *4*(20), 143–156.

Kamaludin, M. (2019). Pendidikan Seumur Hidup ; Konsep, Program dan Implikasinya. *Progresiva : Jurnal Pemikiran Dan Pendidikan Islam*. https://doi.org/10.22219/progresiva.v8i1.8928

Khotimah, U. (2019). Pengaruh Teknologi terhadap Pembelajaran Abad ke 21. *Universitas Lambung Mangkurat*, 1–26.

Musna, R. R., & Juandi, D. (2020). An analysis of junior high school students' creative thinking skills in solving flat-side geometry problems. *Journal of Physics: Conference Series*, *1521*(3). https://doi.org/10.1088/1742-6596/1521/3/032058

Normina, N. (2017). Pendidikan dalam Kebudayaan. *Ittihad Jurnal Kopertais Wilayah XI Kalimantan*.

Pratiwi, N. K. (2017). Pengaruh Tingkat Pendidikan, Perhatian Orang Tua, Dan Minat Belajar Siswa Terhadap Prestasi Belajar Bahasa Indonesia Siswa Smk Kesehatan Di Kota Tangerang. *Pujangga*, *1*(2), 31. https://doi.org/10.47313/pujangga.v1i2.320

Satria, E. (2019). Applying RADEC model in science learning to promoting students' critical thinking in elementary school. In *Journal of Physics: Conference Series* (Vol. 1321, Issue 3). https://doi.org/10.1088/1742-6596/1321/3/032102

Tohir, M. (2019). *Hasil PISA Indonesia Tahun 2018 Turun Dibanding Tahun 2015*. 2018–2019. https://doi.org/10.31219/osf.io/pcjvx

Udin, T., Alfiyanto, A., Hastuti, A., & ... (2022). Improving Children's Moral Values Through Al-Barokah Madrasah in Kota Daro 1 Village, Rantau Panjang District, Ogan Ilir Regency. *… Dan Konseling …*.

Wahyudi, Waluya, S. B., Rochmad, & Suyitno, H. (2018). Assimilation and Accommodation Processes in Improving Mathematical Creative Thinking with Scaffolding According to Learning Style. *Journal of Physics: Conference Series*, *1097*(1), 0–13. https://doi.org/10.1088/1742-6596/1097/1/012156

Yayan Alpian, Sri Wulan Anggraeni, Unika Wiharti, & Nizmah Maratos Soleha. (2019). Pentingnya pendidikan bagi manusia. *JURNAL BUANA PENGABDIAN*. https://doi.org/10.36805/jurnalbuanapengabdian.v1i1.581