

8. The Interaction of Learning Model Implementation and Learning Motivation in Improving Critical Thinking Skills of Elementary School Students.pdf

by

Submission date: 17-Feb-2023 01:17PM (UTC+0700)

Submission ID: 2016354848

File name: 8. The Interaction of Learning Model Implementation and Learning Motivation in Improving Critical Thinking Skills of Elementary School Students.pdf (431.2K)

Word count: 4928

Character count: 26911

The Interaction of Learning Model Implementation and Learning Motivation in Improving Critical Thinking Skills of Elementary School Students

Fira Nadliratul Afrida^{1✉}, Achmad Rifai RC² & Yuli Utanto²

¹ Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia

² Universitas Negeri Semarang, Indonesia

Article Info

History Articles

Received:

July 2018

Accepted:

August 2018

Published:

April 2019

Keywords:

critical thinking skills,

learning model,

learning motivation

DOI

<https://doi.org/10.15294/jpe.v8i1.25342>

<https://doi.org/10.15294/jpe.v8i1.25342>

Abstract

This study has purpose to assess the interaction of the learning model (Problem Based Learning and Inquiry Based Learning) and learning motivation to improve the 21st century skills of elementary school students, particularly at the stage of critical thinking. The method applied was quantitative descriptive by interacting learning model, learning motivation to in improving the 21st century skill by using data analysis techniques of validity, reliability, level of difficulty, normality test, homogeneity test and two-way ANOVA. The data collection technique used in this study was in the form of technical tests of essay test and non-test the form of motivation attitude scale and in-depth interview. Subjects in this study consisted of 64 students. They were divided into two groups, 32 students by using the learning model of PBL model and 32 students using the learning model of IBL. These results of this study showed that; (1) There is no interaction between the learning model of (PBL and IBL) and learning motivation in improving the 21st century skill of elementary students in their critical thinking skills. Based on the statistical analysis, obtained sig value higher than 0.05. (2) To improve the critical thinking of students, the learning model of PBL is better than the learning model of IBL. (3) The implementation of the learning model of (PBL and IBL) was able to increase students' motivation. (4) The increase of students' motivation with PBL learning model was higher than the IBL learning models.

© 2019 Universitas Negeri Semarang

✉ Correspondence address:

Gajayana No. 50 Ma²⁶, Jawa Timur, 65144

E-mail: fira_nadira@gmail.com

[p-ISSN 2252-6404](#)

[e-ISSN 2502-4515](#)

INTRODUCTION

Education is an important instrument in preparing qualified human resources to enter the era of Asean Economic Community. In the 21st century, Indonesian people will return victorious because of the demographic bonus. Indonesia experienced a heyday cycle of several years entering the golden generation of 2045. US-based Partnership for 21st Century Skills (P21), identifying the competencies required in the 21st century is "Communication, collaboration, critical thinking and creativity" (Zubaidah, 2016). Since the advent of global movement calling for a new learning model for the 21st century, has developed the notion that formal education should be changed. These changes are important to bring new forms of learning that is needed in addressing the complex global challenges. Identification of student competencies that should be developed is very important to face the 21st century.

Problems that occur in the education in Indonesia, among others, related to (1) Equity and equality in education, (2) ongoing quality and relevance, and (3) the bureaucracy, governance and accountability. One of the effort to overcome these problems is through learning by teachers inside and outside the classroom. Regardless to the implementation of the curriculum of 2013, still face obstacles that must be handled by educators, one of which is the making of lesson plan (Budianiet, et al. 2017). Lack of understanding of the teachers in designing lesson plans make less learning activities in accordance with scientific approach: to observe, ask, reason, and communicate. Entering 2017, the dynamic development of the curriculum more quickly and significantly, not only in content, but also in the implementation process of learning and assessment system. Revised curriculum learning implementation in 2013 focused on strengthening character education, 21st century skills and high order thinking skills. According to Aeni, et al. (2013) the 21st century skills support learners prepare to think, learn, work, solve problems, communicate, collaborate, and contribute actively. To support

those characteristics it is indeed need the learning model and learning process in accordance with the scientific approach.

Learning models relevant to such scientific approach *Problem Based Learning* and *Inquiry Based Learning*. Fauzi, et al. (2018) stated that *Problem Based Learning* is one of the innovative learning model that applied to students in solving a problem. This learning model applying cognitive theory and constructively to build knowledge and skills of students. The results of the studies (Park & Choi, 2015; Fatchurrohmah, et al. 2017), explains that PBL can improve learning attitude, disposition of critical thinking, decision-making, and improved its verbal ability of learners.

The model of inquiry learning is a learning model that focuses on the discovery of a concept through Scientific activities undertaken by students during the learning process. scientific activities undertaken aim to give students hands-on experience related to a topic being studied so that students can learn about environmental phenomena based on that experience (Hartini & Ferawati, 2016). Meanwhile, the results of the research conducted by Asriningsih (2015) indicated that the inquiry learning model is able to improve the understanding of the concept and character of students through activities to observe, ask questions, plan for investigation, collect the data, analyze the data, and then draw conclusion.

The main cause of students not getting the skills of the 21st century when the learning is a learning model that teachers use less precise in delivering knowledge. Through appropriate learning models, the students will gain the knowledge and skills of the 21st century, the next hurdle was prohibitive in developing the 21st century skills is the motivation to learn and students who did not study directly in the development of the 21st century skills (Mayasari, T., et al. 2016). Motivation in learning can be defined as something that encourages a person to perform the learning activities. Learning activities would be meaningless if it is not arises in the self-motivation of learners.

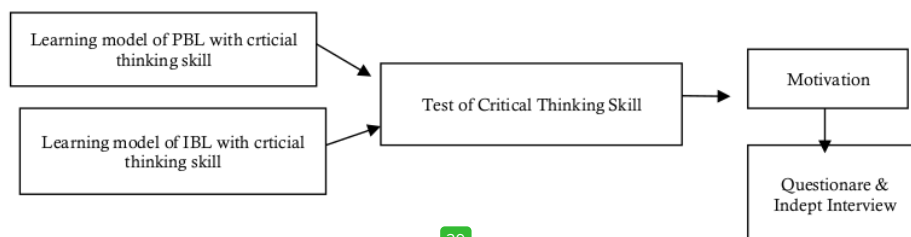
Achievement of science based on a survey Trends in Mathematics and Science Study (TIMSS) by The International Achievement (IEA) in 2015 ranks Indonesia's position of 44 from 47 countries with an average value of 397 (IEA, 2016). The main purpose of science education is to assist students in developing high order thinking skills in preparation to face the challenges of everyday life. Saido, et al. (2015) explains that in learning science, students are required to actively construct their own knowledge through discovery. It needs a strong motivation and a supportive environment so that the desire for active learning and creative (23) dasari, A. 2016). By having motivation, students will study harder, tenacious, diligent, and have full concentration in the learning process.

The findings of the initial study results show field teachers difficulties in implementing problem-based learning model in order to achieve the 21st century skills (*Communication, collaboration, critical thinking and creativity*). Teachers are required to complete one theme in four weeks, while there is not sufficient time to complete the learning the 21st century skills-based science learning materials necessary force and motion and discovery process by using model IBL, after understanding, students are able to apply in everyday life. Then the concept of the application is needed problem-solving based learning model that PBL. So the contain is not quite difficult to be understand and focus for improving 21st century especially in critical

thinking skill. Several previous studies relevant to the learning model PBL, IBL and 21st century skills (Lusiani, et al. 2016; Rachmadhan, et al. 2017; Efan, K. A., 2017; Hartini, et al. 2016; Zubaidah, 2016). Based on several studies that have been put forward, the research found a gap in the form of limitation in previous studies. There are no studies that found especially in integrating the learning model, learning motivation to improve the 21st century skill; therefore, the researcher conducted a study entitled "The Interaction of Learning Model Implementation and Learning Motivation in Improving critical thinking Skills of Elementary School Students".

METHODS

This study applied quantitative factorial design research, where the data was analyzed by describing or illustrating the data that has been collected as it does without having purpose to make conclusions or generalizations apply to the public. Furthermore, this study connected the learning model, learning motivation with the increase of the 21st century by using data analysis techniques of validity, reliability, level of difficulty, normality test, homogeneity test and two-way ANOVA. The moderator variable in this study was a student's learning motivation by implementing the learning model of PBL and IBL model of critical thinking skills as presented in figure 1.



29
Figure 1. Research Design

The population in this study were all fourth grade students of SD N located in Diponegoro area, Tayu, Pati in the Academic Year of 2017/2018. The sampling technique was conducted by the researcher by using a purposive sampling technique and the area were selected based on some consideration, therefore, obtained SD N Tayu Wetan as the samples of the study. This study applied experimental class 1 and experimental class 2 which consist of 32 students for each experimental class. The experimental class 1 was treated by using the learning model of PBL based on the 21st century skills, whereas, the second experimental class was treated by using the learning model of IBL based on the 21st century skills. After given treatment, then the researcher will look at the effects of the two treatments by using descriptive analysis and a hypothesis testing techniques that has been set.

The data collection techniques in this study was by using test and non-test techniques. The tests technique was used to measure the understanding and comprehension of the required material coverage accordance with the learning objectives in the form of essay of *critical thinking* on science learning or science. Arifin (2017) state that in developing measuring instruments *critical thinking skills* or *critical thinking skills* which are compiled the specification of instruments, writing instruments, analyze the instruments, trial the instruments, analyze the items of instruments, repair instruments and assembles instrument. Specifications of instrument shows the overall characteristics to be possessed of an instrument. Indicator aspects of critical thinking skills include: (1) Clarification, students be able to mention the information that is known in the problem correctly and clearly; (2) Assesment, students be able to sort information from the problem that needed to solve and the problem with the information that is not needed to solve; (3) Inference, students be able to solve the problem with the knowledge that have known previously; (4) Strategy, students be able to find the other way to solve the problem in the question. The writing of items is a step in defining the indicators into questions whose

characteristics correspond with the details on the grille that has been made. Meanwhile, the non-test techniques were used to determine students' motivation by conducting in questionnaire and in-depth interview. Giving value for the results of the scale has done by converting the ideal average and standard deviation. To determine the measurement result criteria, the average classification and the ideal standard deviation are used by changing the four score as proposed by Eko (2009).

RESULTS AND DISCUSSION

The results of this study is in the form of quantitative data which was analyze by covering the initial stage and the final stage. The initial stage consists of tests of normality and homogeneity, whereas, the final stage consists of the interaction of two-way ANOVA test. Early stages of the data analysis of this study was to test the homogeneity and normality test data. Based on data analysis by using IBM SPSS Statistics 16 obtained homogeneity and normality test results as can be seen in the following table 1 and table 2.

Data of Normality and Homogeneity of The Research

Table 1 above provides information that the normal distribution of data with regard to the value the significance of the data. Table 1 shows the sig. on Kolmogorov-smirnov is 0.071, whereas the Shapiro-wilk test obtained sig. 0.321. Both tests obtained a sig. more than 0.05, therefore, the data is included in the normal category.

Table 1. Results of Normality Test

	Kolmogorov-smirnov			Shapiro-wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Standardized residual for value	.106	64	.071	.978	64	.312

a. Significance Lilliefors correction

Based on table 2, obtained sig. 0.56. This sig. is greater than 0.05. Therefore, both data of student learning outcomes based on critical thinking skills are considered as homogeneous data or have the same variant.

Table 2. Test of Homogeneity

F	df1	df2	Sig.
2.125	7	56	.056

Interaction of Learning Model with Learning Motivation

Testing of the interaction learning model and learning motivation in improving critical thinking skills of students based on learning outcomes of IPA by using PBL and IBL models which was integrated with students' critical thinking skills. The data analysis was performed by using two-way ANOVA test as can be seen in the following table 3.

Table 3. Interaction of Learning Model and Learning Motivation

Source	Type III sum of squares	df	Mean square	F	Sig.
Corrected model	2434.451	7	347.779	2.989	.010
Intercept	273.307.567	1	273,307.567	2.349E3	.000
Model	65.403	1	65.403	.562	.457
Motivation	1179.078	3	393.026	3.377	.024
Model motivation	839.825	3	279.942	2.406	.077
Error	6516.607	11	116.368		
Total	336.635.750	64			
Corrected total	8951.059	63			

R squared = .272 (Adjusted R squared = .181)

Based on the above table 3, obtained the interaction learning model and learning motivation with sig_{value} of 0.077. The value is > 0.05 then H₀ is accepted, therefore, it is concluded that there is no interaction between the learning model and learning motivation in determining students' critical thinking skills. This happened since the learning outcomes of students by using PBL model was higher than students who used IBL model, the average score of students' learning motivation by using PBL models was higher than students who used IBL learning model. In the learning process by using both learning models, students tend to be active and ask a lot of questions, since previously students had never been applied to the model of PBL and IBL. In the implementation of learning, PBL model can develop students' ability to think critically and develop students' ability to adapt to new knowledge, this was indicated by students way in conducting the procedures of PBL where

the students was easier to do the PBL such as conducting investigations and present the work. During the implementation of PBL model, learners can share their knowledge in their real life, they can link the knowledge gained by experience that has been done before, so that when teachers stimulate the students, they can construct their own knowledge and develop higher skills.

The learning process in the classroom by using the model PBL begins with providing motivation for students to be actively involved in solving a problem that will be done, then teachers help students learn to define and organize tasks related to the issue. Unlike the IBL learning process, the teacher started the activity by presenting events or phenomena and the students make observations that allow the discovery of the problem. It is very influential on the concept of constructing new knowledge in improving students' critical thinking skills. Improvement of 21st century skills, especially in the critical thinking skills of students by using PBL model supported by the characteristics of learners who are very enthusiastic to learn and discover new things so that the teaching and learning process achieve the desired objectives. Whereas, in the IBL model implementation process, indicated less conducive learning situation, students tend to be active, but do not understand the instructions given by the teacher.

The absence of interaction model of learning and motivation to learn in this study is strengthened by the research of Argraw, et al. (2017) who stated that learning model has no significant effect on the motivation to learn. This is because there is a difference in student learning outcomes based model of learning and student motivation influence on student learning outcomes. In table 3 there is also a difference in students' motivation is based on learning outcomes in terms of critical thinking to the level of sig. 0.024. Motivation categorized into four, namely: excellent, good, sufficient and less. From these two experiments obtained an average of motivation with excellent category 78.708, 74.125 good category, with sufficient motivation 68.048 and lack motivation as 68.476. This is due

to the level of student motivation effect on student learning outcomes. In line with the research of Prastiwi (2018) which states that the higher the score of the student science process skills the higher student motivation.

The Data of The 21st Century Skills of Students (Critical Thinking), by Using The Learning Model of PBL and IBL.

Data of students' learning outcomes in terms of critical thinking skills based tests students' understanding of materials science teaching force and motion by using elements of critical thinking skills. In the process of classroom learning experiment by using PBL and IBL learning model that integrates seamlessly with Critical Thinking skills can be seen in the following table 4.

Table 4. Learning Outcomes Viewed from The Student's Critical Thinking Based on Learning Model

Learning model	Mean	Std. error	95% Confidence interval	
			Lower bound	Upper bound
Model PBL	73.458	2.165	69.121	77.795
Model IBL	71.220	2.056	67.102	75.338

Based on table 4 above, the average score of learning outcomes in terms of critical thinking of students by using PBL learning model is 73.458, whereas, the average acquisition of student learning outcomes by using IBL models is 71.220. From these results it is known that student learning outcomes viewed from critical thinking by using the learning model of PBL is higher than IBL. This happened due to the differences in the characteristics of learners who tend to have high motivation during the PBL model implementation. Based on the observation of the students' critical thinking skills, their critical thinking skills differences lies in the time to solve the problems. Learners with the application of PBL learn concepts based on problems, meanwhile, learners with the learning model of IBL answered questions and solve problems based on facts or observations. It is very influential on information processing skills, gather information to solve problems that being

analyze. In the end of the learning process by using the model of PBL, students do evaluation process on problems that have been done before. This activity also affects the test results students' critical thinking skills. Reinforced by the results of the study (Latitude, et al. 2017; Abdullah, et al. 2015; Nugraha, et al. 2017) which states that the PBL model can improve learning outcomes, solving problems and developing thinking skills in solving problem. The result of the calculation of the average student learning outcomes in terms of critical thinking skills in accordance with the aspects of the elements of critical thinking skills is to give a simple explanation, build basic skills, concluded, explaining further and set the strategy and tactics that specifies an action to interact with others (Sunaryo, Y. 2014).

Data of Student Motivation

Students' motivation was obtained from the attitude scale. Attitude scale used is the scale enclosed motivation, motivation scale is distributed to all the students to know the development of student motivation. Grating student motivation instrument that includes the student's attention, confidence, willingness to learn and cooperation. (Fauziatul, et al. 2015). In this process, the researcher in collaboration with the classroom teachers to see the development of student motivation after using the learning model of PBL and IBL. Data of student motivation based on learning model can be seen in the following table 5.

Based on the above table 5, obtained an average student motivation of the fourth grade students of SD 01 Sambiroto after using the learning model of PBL is 74.2750, meanwhile, the average of student motivation after using IBL learning model is 68.7344. Motivation of students in the experimental class by using the learning model of PBL is higher than that of student motivation with IBL learning model, the result of the test is in accordance with the acquisition of critical thinking skills of students by using PBL models which is higher than that of students who used IBL learning model. Based on the results of learning motivation attitude scale showed that

the attention of students by using PBL learning model is higher than students who used IBL learning model. Learners have more interest in the subject matter and felt it was important to understand the subject matter. PBL students' willingness to learn is also higher than students in IBL learning model, students felt easier to find information related to the subject matter and were able to connect prior knowledge.

Table 5. Student Motivation

Learning model	Motivation to learn	Mean	Std. deviation	N
Model PBL	Very good	75.2500	11.98668	10
	Good	75.2500	5.32943	10
	Enough	74.1667	11.98958	9
	Less	69.1667	9.46485	3
	Total	74.3750	9.79631	32
Model IBL	Very good	82.1667	6.09645	6
	Good	73.0000	8.90926	5
	Enough	61.9286	11.95160	14
	Less	67.7857	14.59697	7
	Total	68.7344	13.27986	32
Total	Very good	77.8438	10.51462	16
	Good	74.5000	6.49175	15
	Enough	66.7174	13.18989	23
	Less	68.2000	12.74363	10
	Total	71.5547	11.91974	64

The results of observations conducted by the researcher during the learning process, the students with the application of PBL have higher enthusiasm compared to the students with IBL. Learners with a greater interest towards learning will help them understand the material being taught. During the learning process of students always want to try to find new things to explore knowledge. In terms of communication and collaboration PBL students present the results of the investigation report has been done with confidence and show the ability to work efficiently with diverse groups. Other factors that influence student motivation of the fourth grade students of SD N 01 Sambiroto is the lack of provision of extrinsic motivation that can provide guidance and raise aspirations so that students have a high learning spirit.

The results are consistent with the theory that factors that increase students' achievement motivation is high. Agustya (2017) states that motivation is an important factor in determining

student achievement so that motivation is a factor in the successful development and learning process. Motivation is also a driving force that has been realized in the form of behavior. The driving force is contained in a person to perform certain activities to achieve one goal.

CONCLUSION

Based on data analysis and discussion, it can be concluded that; there is no significant interaction between the learning model of (PBL and IBL) and learning motivation in improving the skills of the 21st century, particularly on the critical thinking skill of elementary school students. Based on the statistical analysis results, obtained Sig greater than 0.05; to improve the students' critical thinking skill, PBL learning model is better than the IBL learning model. The implementation of learning model of (PBL and IBL) was able to increase students' motivation and the increase of students' motivation by using the learning model of PBL is higher than the IBL learning model.

REFERENCES

- Abdullah, D., Mastur, Z., & Sutarto, H. (2015). Keefektifan Model Pembelajaran *Problem Based Learning* Bernuansa Etnomatematika terhadap Kemampuan Pemecahan Masalah Siswa Kelas VIII. *Unnes Journal of Mathematics Education*, 4(3), 285-291.
<https://journal.unnes.ac.id/sju/index.php/ujme/article/view/9056>
- Aeni, N., Prihatin, T., & Utanto, Y. (2017). Pengembangan Model Blended Learning Berbasis Masalah pada Mata Pelajaran Sistem Komputer. *Innovative Journal of Curriculum and Educational Technology*, 6(2), 27-38.
<https://journal.unnes.ac.id/sju/index.php/ujet/article/view/15642>
- Agustiya, F., Sunarso, A., & Haryani, S. (2017). Influence of CTL Model by Using Monopoly Game Media to The Students' Motivation and Science Learning Outcomes. *Journal of Primary Education*, 6(2), 114-119.
<https://journal.unnes.ac.id/sju/index.php/jpe/article/view/17559>
- Arifin, Z. (2017). Mengembangkan Instrumen Pengukur *Critical Thinking Skills* Siswa pada

- Pembelajaran Matematika Abad 21. *Theorems (The Original Research of Mathematics)*, 1(2), 92-100.
<http://jurnal.unma.ac.id/index.php/th/article/view/383>
- Asriningsih, K. K. A., Supardi, K. I., & Wardani, S. (2015). Pengaruh Model Pembelajaran Inkuiri Terbimbing Berbasis Lingkungan terhadap Kemampuan Pemahaman Konsep dan Karakter pada Siswa Kelas V SD. *Journal of Primary Education*, 4(2), 132-138.
<https://journal.unnes.ac.id/sju/index.php/jpe/article/view/10973>
- Ates, H. K. & Yilmaz, P. (2018). Investigation of the Work Motivation Levels of Primary School Teachers. *Journal of Education and Training Studies*, 6(3), 184-196.
<https://eric.ed.gov/?id=EJ1171044>
- Budiani, S., Sudarmin, & Syamwil, R. (2017). Evaluasi Implementasi Kurikulum 2013 di Sekolah Pelaksana Mandiri. *Innovative Journal of Curriculum and Educational Technology*, 6(1), 45-57.
<https://journal.unnes.ac.id/sju/index.php/ujet/article/view/15998>
- Fauziatul, F., Wiwik, K., & Subandi. (2015). Pengaruh *Problem Solving* Berkelompok terhadap Motivasi Belajar, Kemampuan Berpikir Kritis, dan Hasil Belajar Siswa. *Jurnal Ilmu Pendidikan*, 21(1), 106-114.
<http://journal.um.ac.id/index.php/jip/article/view/6493>
- Fatchurrohman, A., Sarwi, S., & Utsman, U. (2017). Pengaruh *Problem Based Learning* melalui Demonstrasi dan Diskusi terhadap Kemampuan Verbal. *Journal of Primary Education*, 6(2), 140-146.
<https://journal.unnes.ac.id/sju/index.php/jpe/article/view/17567>
- Fauzi, M., Hartono, H., & Utomo, U. (2018). The Role of Students' Critical Thinking and Interpersonal Intelligence in Understanding The Concept of Science. *Journal of Primary Education*, 7(1), 25-33.
<https://journal.unnes.ac.id/sju/index.php/jpe/article/view/21392>
- Hartini, I., & Ferawati, F. (2016). Effectiveness of Inquiry Learning and Problem-Based Learning on Students' Achievement in Science Course. *Jurnal Inovasi Pendidikan Dasar*, 2(1), 27-34.
<http://jipd.uhamka.ac.id/index.php/jipd/article/view/35>
- IEA. (2015). *Student Achievement Overview (Science) Grade 4*.
<http://timss2015.org/wp-content/uploads/filebase/full%20pdfs/T15-International-Results-in-Science-Grade-4.pdf>
- Indasari, A. (2016). Peningkatan Motivasi Belajar Siswa Kelas IV dalam Pembelajaran IPA melalui Penerapan Metode Penemuan Terbimbing. *Jurnal Pendidikan Guru Sekolah Dasar*, 20(5), 1-12.
<http://journal.student.uny.ac.id/ojs/index.php/pgsd/article/view/2551>
- Lusiani, L. P. Semara, P & Surya, M. (2016). Penerapan PBL dengan *Brainstorming* untuk Meningkatkan Kemampuan Pemecahan Masalah dan Kompetensi Pengetahuan IPA. *MIMBAR PGSD Undiksha*, 4(1), 1-10.
<https://ejournal.undiksha.ac.id/index.php/JJPGSD/article/view/7009>
- Mayasari, T., Asep, K., Dadi, R., & Ida, K. (2016). Apakah Model Pembelajaran *Problem Based Learning* dan *Project Based Learning* Mampu Melatihkan Keterampilan Abad 21. *Jurnal Pendidikan Fisika dan Keilmuan*, 2(1), 48-55.
<http://ejournal.unipma.ac.id/index.php/JPFK/article/view/24>
- Nugraha, A., Suyitno, H., & Susilarningsih, E. (2017). Analisis Kemampuan Berpikir Kritis Ditinjau dari Keterampilan Proses Sains dan Motivasi Belajar melalui Model PBL. *Journal of Primary Education*, 6(1), 35-43
<https://journal.unnes.ac.id/sju/index.php/jpe/article/view/14511>
- Park, S & Choi, S. (2015). Effects of Problem-based Learning on the Learning Attitudes, Critical Thinking Disposition and Problem-Solving Skills of Nursing Students: Infant Care. *Advanced Science and Technology Letters*, 103, 192-196.
<https://pdfs.semanticscholar.org/507b/9146c159de0082c701c8977d700d9be3dba5.pdf>
- Prastiwi, D., Sri Haryani, S. H., & Lisdiana, L. (2018). The Effectiveness of Guided Inquiry with Mind Mapping to Improve Science Process Skills and Learning Motivation. *Journal of Primary Education*, 7(2), 195-203.
<https://journal.unnes.ac.id/sju/index.php/jpe/article/view/23535>
- Rachmadhan, O., Zainal, A., & Hana, S. (2017). Efektivitas Penggunaan Model Pembelajaran Inkuiri terhadap Peningkatan Keterampilan Proses Siswa Kelas IV di Sekolah Alam Cikeas. *Educational Technologia*, 3(1), 1-12.
<http://ejournal.umm.ac.id/index.php/jp2sd/article/view/2801>

- Saido, G. M., Siraj, S., Nordin, A. B. B., & Amedy, A. (2015). Higher Order Thinking Skills among Secondary School Students in Science Learning. *Malaysian Online Journal of Educational Sciences*, 3(3), 13-20.
<https://eric.ed.gov/?id=EJ1085914>
- Sunaryo, Y. (2014). Model Pembelajaran Berbasis Masalah untuk Meningkatkan Kemampuan Berpikir Kritis dan Kreatif Matematik Siswa SMA di Kota Tasikmalaya. *Jurnal Pendidikan dan Keguruan*, 1(2), 41-51.
<http://pasca.ut.ac.id/journal/index.php/JPK/article/view/58>
- Zubaidah, S. (2016). *Keterampilan Abad Ke 21: Keterampilan yang diajarkan melalui Pembelajaran. Seminar Nasional Pendidikan. STKIP Persada Khatulistiwa Sintang Kalimantan Barat.*
https://www.researchgate.net/publication/318013627_keterampilan_abad_ke-21_keterampilan_yang_diajarkan_melalui_pembelajaran

8. The Interaction of Learning Model Implementation and Learning Motivation in Improving Critical Thinking Skills of Elementary School Students.pdf

ORIGINALITY REPORT

24%

SIMILARITY INDEX

16%

INTERNET SOURCES

19%

PUBLICATIONS

6%

STUDENT PAPERS

PRIMARY SOURCES

1	www.semanticscholar.org Internet Source	1 %
2	Submitted to Universiti Sains Malaysia Student Paper	1 %
3	download.garuda.kemdikbud.go.id Internet Source	1 %
4	www.ejournal.radenintan.ac.id Internet Source	1 %
5	M. Fabiana Jacintha Mary, M Mary Mejrullo Merlin. "Analyzing the need for orchestration of smart mobile devices, software and pedagogical design in the teaching learning process for secondary school students using IFCM method", Malaya Journal of Matematik, 2020 Publication	1 %
6	www.coursehero.com Internet Source	1 %

7	I Rozana, M Makmuri, L E Hakim. "Problem-based and thinking talk write learning model, mathematical reasoning, and transformation geometry", Journal of Physics: Conference Series, 2020	1 %
Publication		
8	www.ijstr.org	1 %
Internet Source		
9	Submitted to Universitas Sebelas Maret	1 %
Student Paper		
10	eudl.eu	1 %
Internet Source		
11	iiste.org	1 %
Internet Source		
12	M Hafiz, Darhim, J A Dahlan. "Comparison of mathematical literacy enhancement between students with problem-based learning and guided discovery learning model", Journal of Physics: Conference Series, 2020	1 %
Publication		
13	S Astutik, I K Mahardika, Supeno, Indrawati, Sudarti, A F Zakaria, F Sugianto. "Development of the Field Analysis and Laboratory Learning Model to Improve Critical Thinking of Senior High School Students", Journal of Physics: Conference Series, 2020	1 %
Publication		

14	iojet.org Internet Source	1 %
15	Ratna Yulis Tyaningsih, Nourma Pramestie Wulandari, Junaidi, Deni Hamdani, Sumbaji Putranto. "The effect of group mentoring learning on student's creativity in solving partial differential equations problems", Journal of Physics: Conference Series, 2021 Publication	<1 %
16	Submitted to Universitas Pendidikan Indonesia Student Paper	<1 %
17	Sri Winarsih, Khresna Bayu Sangka, Dini Octoria. "The effect of direct instruction and problem based learning on millennial", AIP Publishing, 2019 Publication	<1 %
18	journal2.uad.ac.id Internet Source	<1 %
19	www.awej.org Internet Source	<1 %
20	journal.stkipsingkawang.ac.id Internet Source	<1 %
21	Heri Jaka Setiawan, Nur Islami. "Improving Critical Thinking Skills Of Senior High School Students Using The Problem Based Learning	<1 %

Model", Journal of Physics: Conference Series,
2020

Publication

22

Zarah Puspitaningtyas. "Assessment of financial performance and the effect on dividend policy of the banking companies listed on the Indonesia Stock Exchange", Banks and Bank Systems, 2019

Publication

<1 %

23

www.ijsht-journals.org

Internet Source

<1 %

24

E B Rahaju, P Wijayanti. "The development of student worksheet by using discovery-based approach: a case study in learning media course", Journal of Physics: Conference Series, 2018

Publication

<1 %

25

Ibrahim Ibrahim, Nurul Akmal, Marwan Marwan. "Problem-based Learning and Student Critical Thinking to Improve Learning Achievement at Private Universities in Aceh", AL-ISHLAH: Jurnal Pendidikan, 2021

Publication

<1 %

26

Submitted to Montana State University,
Bozeman

Student Paper

<1 %

27

repository.umsu.ac.id

Internet Source

<1 %

28	Submitted to Pacific University Student Paper	<1 %
29	ejournal.undiksha.ac.id Internet Source	<1 %
30	Submitted to Program Pascasarjana Universitas Negeri Yogyakarta Student Paper	<1 %
31	Submitted to University of Maine Student Paper	<1 %
32	digitalcommons.umassglobal.edu Internet Source	<1 %
33	download.atlantis-press.com Internet Source	<1 %
34	downloads.newcastle.edu.au Internet Source	<1 %
35	ejournal.unesa.ac.id Internet Source	<1 %
36	Azhar Chaeruddin Rahim, Jumadi, Insih Wilujeng, Heru Kuswanto. "The Effect of PjBL Model based on Skill Approach Process to Physics Critical Thinking Ability of High School Student", Journal of Physics: Conference Series, 2019 Publication	<1 %

37

Maria Waldetrudis Lidi, Maimunah H Daud.
"Project-based learning based on local
wisdom through google classroom to improve
process skills in pandemic times", JURNAL
BIOEDUKATIKA, 2021

Publication

<1 %

38

Teguh Adi Nugroho, Indri Anugraheni.
"Efektivitas Model Pembelajaran Problem
Solving Dan Problem Posing di Tinjau Dari
Cara Berfikir Kreatif Matematika Di Sekolah
Dasar", Jurnal Cendekia : Jurnal Pendidikan
Matematika, 2021

Publication

<1 %

39

eprints.utm.my

Internet Source

<1 %

40

Aulia Indah Saputri, Choiriyah Widyasari.
"Application of Reward and Punishment to
Develop Disciplinary Behavior of Early
Childhood", Early Childhood Research Journal
(ECRJ), 2022

Publication

<1 %

41

Iin Murtini, Siti Zubaidah, Dwi Listyorini.
"Improving students' cognitive and critical
thinking skills through research-based cell
division control module", AIP Publishing, 2020

Publication

<1 %

42

John Rafafy Batlolona, Haryo Franky Souisa. "Problem based learning: Students' mental models on water conductivity concept", International Journal of Evaluation and Research in Education (IJERE), 2020

Publication

<1 %

43

Muhammad Reza Arrosid, Yennita Yennita, Bhakti Karyadi. "MODEL KOOPERATIF TIPE THINK PAIR SHARE (TPS) UNTUK MENINGKATKAN KEMAMPUAN BERPIKIR KELAS X IPA3 SMA NEGERI 1 KOTA BENGKULU", Diklabio: Jurnal Pendidikan dan Pembelajaran Biologi, 2019

Publication

<1 %

44

Mutiara Hasanah, Yanti Fitria. "Pengaruh Model Problem Based Learning Terhadap Kemampuan Kognitif IPA pada Pembelajaran Tematik Terpadu", Jurnal Basicedu, 2021

Publication

<1 %

45

Saiful Amin, Sumarmi Sumarmi, Syamsul Bachri, Singgih Susilo, Abdul Bashith. "The Effect of Problem-Based Hybrid Learning (PBHL) Models on Spatial Thinking Ability and Geography Learning Outcomes", International Journal of Emerging Technologies in Learning (ijET), 2020

Publication

<1 %

46

Internet Source

<1 %

47

repo.undiksha.ac.id

Internet Source

<1 %

48

Atilla Dilekçi, Halit Karatay. "THE EFFECTS OF THE 21ST CENTURY SKILLS CURRICULUM ON THE DEVELOPMENT OF STUDENTS' CREATIVE THINKING SKILLS", *Thinking Skills and Creativity*, 2023

Publication

<1 %

49

Dodik Mulyono, Moch Asmawi, Tuti Nuriah. "The Effect of Reciprocal Teaching, Student Facilitator and Explaining and Learning Independence on Mathematical Learning Results by Controlling the Initial Ability of Students", *International Electronic Journal of Mathematics Education*, 2018

Publication

<1 %

50

Rany Widyastuti, Suherman, Bambang Sri Anggoro, Hasan Sastra Negara, Mientarsih Dwi Yuliani, Taza Nur Utami. "Understanding Mathematical Concept: The Effect Of Savi Learning Model With Probing-Prompting Techniques Viewed From Self-Concept", *Journal of Physics: Conference Series*, 2020

Publication

<1 %

51 U Usmeldi, R Amini. "The effect of integrated learning model to the students competency on the natural science", Journal of Physics: Conference Series, 2019

Publication

<1 %

52 R Rusmono, S Sulardi, S Suyitno. "Influence of learning model and learning motivation to learning outcome of micro hydro power plant", IOP Conference Series: Materials Science and Engineering, 2018

Publication

<1 %

53 Siti Nurhalizah, Siti Zubaidah, Susriyati Mahanal, Deny Setiawan. "RICOSRE for the empowerment of students' creative thinking skills", AIP Publishing, 2020

Publication

<1 %

54 Y Sunaryo, A T Fatimah. "Contextual approach with scaffolding: an effort to improve student's mathematical critical thinking", Journal of Physics: Conference Series, 2020

Publication

<1 %

55 journal.lppmunindra.ac.id

Internet Source

<1 %

Exclude quotes On

Exclude matches Off

Exclude bibliography On

