AL IBTIDA: JURNAL PENDIDIKAN GURU MI (2022) Vol 9 (2) : 292-304
DOI: http://dx.doi.org/ 10.24235/al.ibtida.snj.v9i2.10485

Al Ibtida: Jurnal Pendidikan Guru MI
ISSN: 2442-5133, e-ISSN: 2527-7227
Journal homepage: http://syekhnurjati.ac.id/jurnal/index.php/ibtida
Journal email: alibtida@syekhnurjati.ac.id

Improving the Critical Thinking Skills of Elementary School Students through Problem Based Learning and Inquiry Models in Social Science Learning

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Received: June 02nd, 2022. Accepted: October 09th, 2022. Published: October 30th, 2022.

Abstract

The critical thinking skills are an important component to be instilled in elementary schools. The purpose of this study was to test the critical thinking skills of fifth grade students elementary school through the Problem Based Learning model and the Inquiry model based on the interest in learning social science using authentic assessments. Employing a quasi-experiment with Pretest-Posttest Control Group Design, this study involved 49 fifth grade elementary school students in two classes. A total of 24 students in the experimental class A learned using the Problem Based Learning (PBL) model, whereas 25 students in the experimental class B learned using the Inquiry model. The data were collected using description tests and questionnaires. The test was based on the level of reliability of 0.551, while the questionnaire with reliability of 0.893 was tested using ANOVA. The results of the study revealed that the implementation of the PBL model in social science learning was quite effective in improving critical thinking skills compared to the Inquiry model. The highest critical thinking ability was in students who had

high learning interest in social science learning. This research contributed differently to the improvement of the social science learning process to acquire one of the 21st century thinking skills.

Keywords: *problem-based learning model, inquiry model, critical thinking.*

Abstrak

Kemampuan berpikir kritis merupakan komponen penting yang perlu ditanamkan di sekolah dasar. Tujuan penelitian ini adalah untuk menguji kemampuan berpikir kritis siswa kelas V sekolah dasar melalui model Problem Based Learning (PBL) dan model Inquiry berdasarkan minat belajar mata pelajaran IPS dengan menggunakan penilaian autentik. Menggunakan eksperimen semu dengan Pretest-Posttest Control Group Design, penelitian ini melibatkan 49 siswa kelas V sekolah dasar. Sebanyak 24 siswa di kelas eksperimen A belajar dengan model Problem Based Learning, sedangkan 25 siswa pada kelas eksperimen B belajar dengan model Inquiry. Data dikumpulkan dengan menggunakan tes deskripsi dan kuesioner. Pengujian didasarkan pada tingkat reliabilitas 0,551, sedangkan kuesioner dengan reliabilitas 0,893 diuji menggunakan ANOVA. Hasil penelitian menunjukkan bahwa penerapan model PBL dalam pembelajaran IPS cukup efektif dalam meningkatkan kemampuan berpikir kritis dibandingkan dengan model Inquiry. Kemampuan berpikir kritis tertinggi terdapat pada siswa yang memiliki minat belajar yang tinggi pada pembelajaran IPS. Penelitian ini memberikan kontribusi yang berbeda terhadap peningkatan proses pembelajaran IPS untuk memperoleh salah satu keterampilan berpikir abad 21.

Kata kunci*: model PBL, model inquiry, berpikir kritis*.

INTRODUCTION

Critical thinking skills are an important component that needs to be instilled to elementary school students. Critical thinking skills are very necessary in 21st century learning (Irwanto et al., 2018; Gürler, 2022). The 21st century is marked by the rapid developments and sophisticated technological advances that require someone to think critically. Through critical thinking, students can sort out the information received and express their opinions with logical reasons (Hendriana et al, 2017). Students need to instill critical thinking skills so that they can recognize, identify, and overcome problems found in everyday life (Nugraheni et al, 2022; Russell III, Waters, & Turner, 2017). In addition, critical thinking skills are needed in preparing students to compete in the world of work (Duffy et al, 2022).

According to Fajari (2021), the critical thinking skills of elementary school students are still very low. It can be seen from the student and teacher factors. The followings are the factors from students: 1) Students answer test questions unsystematically; 2) Students incorrectly identify questions; questions are only summarized as answers; 3) Students experience misunderstandings; and 4) Students do not understand the materials but they only memorize it. Meanwhile, the followings are the factors from teachers: 1) The majority of teachers use direct learning models with lectures; 2) The material provided is not contextual so that it is less familiar to students; 3) The problems and learning models used cannot be understood by students; and 4) Teachers have less understanding of the materials; they only rely on textbooks so that they are not adept in delivering material to students.

Insights on the low thinking ability of elementary school students in Indonesia are reinforced by the results of research by Wahyuni, Widiastuti and Santika (2022) in Denpasar; Chusni et al. (2021) in Surakarta; Wibowo et al. (2022) in Sintang; Subariyanto, Ambarita, and Yulianti (2022) in Lampung; Huda and Abduh (2021) in Boyolali; Hidayatullah, Ulya, and Pratiwi (2022) in Jepara; Ariyani and Prasetyo (2021) in grade 4 of elementary school. The results of this study indicate that elementary school students have difficulty in critical thinking. Critical thinking indicators are found in analyzing problems, solving problems, and making conclusions.

The results of observations at LJ Elementary School, located in Majalengka Regency, showed that most of students had low critical thinking skills in social science learning. In the learning process, most students did not respond to questions posed by the teacher. Students were less interested in social science learning, because they had to memorize the materials. The social science learning was also still conventional in which the students paid attention to the teacher's explanation then did the tasks given by the teacher.

Critical thinking can be implemented through a learning process for developing knowledge and actions to understand subjects, content and problem solving (Hidayati, Zubaidah & Amnah, 2022). Teachers must have critical thinking skills in social science learning in elementary schools so that they can equip students with critical thinking skills (Uslu, 2020). In its implementation, social science learning is not attractive to students of elementary schools. They consider social science learning as a boring, unpleasant, and monotonous subject, with too much memorization and less variety of activities. It makes students feel bored and have a lack of interest in learning social science because it requires a broad understanding of concepts (Danis, 2020). Meanwhile, the students' interest in the lesson plays an important role as a "motivating force" that will encourage them to learn (Riwahyudin, 2015).

The implementation of social science learning is needed in everyday life. Social science is an important basis in developing the students' intellectual, emotional, cultural, and social competence so that they are able to develop ways of thinking, acting, and behaving, and being responsible for individuals, society, and citizens of the world (Wicaksono, et al., 2016). Through social science learning, students can develop critical thinking skills in analyzing the social conditions of people who live dynamically (Hermanto, Japar, & Utomo, 2019).

Social science learning in elementary schools using the Problem Based Learning (PBL) model and the Inquiry model can improve the critical thinking skills of elementary school students (Huda & Abduh, 2021; Zuryanty et al., 2019). Through the PBL model, students can solve problems and think critically according to the actual context (Glazer, 2001). Students gain experience in dealing with realistic problems, and emphasize communication skills, collaboration, and available resources to formulate ideas and develop reasoning skills (Nafiah & Suyanto, 2014). In addition, the PBL model raises the student interest in learning so that it can improve cognitive learning outcomes in social science for elementary school students (Permatasari, Gunarhadi, & Riyadi, 2018).

In its implementation, the inquiry model is in accordance with the thinking level of elementary school students at the level of concrete thinking (Palupi et al., 2020). The Inquiry model focuses on the investigations of the contextual problems to increase engagement and

learning outcomes (Preston, Harvie, & Wallace: 2015). Students are given the opportunity to be actively involved in the learning process through investigations so that they can train students to think critically in finding their own knowledge (Arends, 2008). As explained by Johnson and Cuevas (2016), the Inquiry model requires students to build knowledge through relevant activities and investigations so that students are motivated and involved in critical thinking.

The research on the implementation of the Problem Based Learning and the Inquiry model has been carried out by several researchers. Laliyo, Sumintono, and Panigoro (2022) investigated the implementation of the inquiry model in measuring the conceptual change of hydrolysis of class XI students. The results could have an impact on student learning progress. Huang (2022) explored the implementation of an inquiry-based laboratory. The results could improve teamwork, problem solving skills and attitudes. Saleh et al. (2022) scrutinized collaborative inquiry through PBL learning. As a result, students were able to learn teacher-targeted materials by integrating the information they learned into problem-solving solutions. Hamzah et al. (2022) probed into the implementation of the PBL model in religion courses. The results showed that the Problem Based Learning-Based Blended Learning model could effectively support student learning achievement. Tanjung et al. (2022) investigated the implementation of the PBL model with a Technological, Pedagogical, and Content Knowledge (TPACK) approach. The results affected the learning outcomes of high school students for the history subject.

This research is different with previous research. This research focuses on testing the critical skills of fourth grade students through the Problem Based Learning model and the Inquiry model based on the interest in learning social science using authentic assessment. The Problem Based Learning model and the Inquiry model emphasize the deep learning process; critical thinking provides an active challenge and improves student learning outcomes in high school (Fatmaryanti et al., 2022; Tanjung et al., 2022; Hamzah et al., 2022). Social science learning needs to be implemented in elementary schools to improve the students' critical thinking skills. Teachers can design learning so that they can provide meaningful experiences for students in improving critical thinking skills. The teachers design learning using the Problem Based Learning model and the Inquiry model that can be applied in social science learning by paying attention to the level of interest in learning for elementary school students. The purpose of this study was to test the critical thinking skills of fifth grade students through the Problem Based Learning model and the Inquiry model based on authentic assessment in terms of interest in learning social science.

METHODS

Using a quantitative research approach, descriptive and quasi-experimental methods were used to determine the effect of the Problem Based Learning model and the Inquiry model on students' critical thinking skills in social science learning in elementary school settings. The population in this study were scores for improving critical thinking skills in terms of student learning interest in class VA and VB at the Elementary School (LJ) located in Majalengka Regency. The samples in this study were 49 students, 24 students were in the experimental group of the PBL model and 25 students in the experimental group of the Inquiry model.

The research instrument used was test and non-test. The test was used to determine critical thinking skills in the form of description questions. The pretest (before treatment) and posttest (after treatment) were carried out in the experimental class. The test instrument was developed in accordance with critical thinking indicators and Theme 8 of social science material "Daerah Tempat Tinggalku (My Living Area)" for class V of curriculum 2013.

Table 1. Indicators of Critical Thinking Skills in Social Studies

Indicators of Critical Thinking	Sub Indicators of Critical Thinking	Details Sub Indicators of Critical Thinking	Cognitive Level	Number of Question
(1)	(2)	(3)	(4)	(5)
Elementary Clarification	Focusing the question	Students can determine the causes of residents' livelihoods adapted to the environment	C5	1
Basic Support	Customize with Source	Students can give reasons related to villagers working as farmers while city residents working in the service sector	C4	2
Inference	Induce and consider the results of induction	Students can conclude related to the livelihoods of different residents according to the environment in which they live	C5	3
Advanced Clarification	Define terms and consider	Students can analyze about service workers	C4	4
Strategy and Tactics	Interact with other people	Students can compare the differences between farmers in the highlands and farmers in the lowlands	C5	5

Source: Sobocan et al., (2022).

The non-test was used to determine student learning interest in the form of a student learning interest questionnaire consisting of 4 indicators, namely feelings of pleasure, attention, interest, and student involvement (Putri & Ngabekti, 2021). Based on the indicators, a total of 27 statements consisting of positive and negative statements were made.

Table 2. Indicators of Learning Interest

Indicator	Information	Statement		Item
		Positive	Negative	
Feelings of pleasure	Student opinion about learning social studies Student's impression of social studies teacher Students' feelings during following social science learning	3,4,5,	1,2,6,	6

Indicator	Information	Statement		Item
		Positive	Negative	
Attention	Caution when following social science learning Attention of students during lesson discussion social studies	8,10,11, 12,13,	7,9,14, 15	9
Interest	Students' curiosity when participating in social science learning Acceptance of students when given assignments/ homework by the teacher	16,18,19, 22	17,20,2 1	7
Student involvement	Awareness about studying at home Student activities after and before entering school	24,25,26	23,27	5
Total				27

The instrument validity of critical thinking descriptions and learning interest questionnaires was carried out through content validity. The content validity referred to the assessment of experts by involving PGSD lecturers with social studies concentration and practitioners. The validation stage of critical thinking questions carried out was to see the suitability of competencies, indicators, and social studies material that had been written into items in the critical thinking test instrument. In the student learning interest questionnaire, the researchers looked at the suitability between the indicators of student learning interest and the learning interest questionnaire tested on students. The purpose of content validity was to determine eligibility. The results of expert validation can be seen in Table 3 below:

Table 3. Instrument Validity Results

Validation Results	Average
Critical Thinking Questions	3,56
Learning Interest Questionnaire	3,67

The Table 3 has shown the results of the validity test carried out by 2 PGSD lecturers with social studies concentration, 3 SD teachers as national instructors for the 2013 curriculum, 1 SD teacher as an exemplary teacher. The average score of student critical thinking was 3.56 whereas average score of student learning interest was 3.67. It can be concluded the instrument on critical thinking and student learning interest was valid. The instrument was suitable for use in research.

The testing of empirical validity was conducted on two variables, namely critical thinking and student learning interest. The validity of the critical thinking test and the questionnaire on learning interest was calculated using IBM SPSS 26, Microsoft Excel and Anates. The validity test of critical thinking consisted of 5 items. The questions were tested on 49 students. The validity test method was the Bivariate Pearson correlation and the Correlated Item-Total Correlation. The correlation value between the item scores and the total score was obtained. This value was then compared with the value of the r table. The r table was sought at a significance of 0.05 with (n) 49 (the number of students); the r table of 0.282 was then obtained. Thus, the value of r of items 1 to 5 with was higher than the value of r table (r count > r table). The items were valid and feasible to use.

The validity test on the 27-item learning interest questionnaire contained 2 invalid statements, namely the statement number 13 and 23. The two items were omitted because the indicators in the statement were represented by other statements. The 25 valid statement were then used to obtain the research data. The correlation between the item scores and the total score was obtained. This value was compared with the value of r table. The r table was sought at a significance of 0.05 with (n) 49 (the number of students). The r table of 0.282 was then obtained. The items were valid and feasible to use.

The reliability test was done to test the accuracy or constancy of the tool of measurement. The reliability test was carried out on two variables, namely critical thinking and student learning interest. The reliability test on critical thinking questions was calculated using the Cronbach Alpha. The results of the reliability test on the students' critical thinking questions can be seen in Table 4 below:

Table 4. Results of the Reliability Test of Critical Thinking Questions

Cronbach's Alpha	N of Items
.511	5

Based on the output results in Table 4, the Cronbach's Alpha value was 0.511. This value was then compared with the value of r table. The r table was sought for a significance of 0.05 with a 2-sided test and (n) 49. The r table of 0.282 was then obtained. Thus, the calculated r value was higher than the r table value. The r count > r table (0.511 > 0.282). The items were reliable.

The reliability test on the student learning interest questionnaire was calculated using the Cronbach Alpha formula. The results of the calculation of the reliability test on student learning interest questionnaire can be seen in Table 5 below:

Table 5. Results of Learning Interest Reliability Test

Cronbach's Alpha	N of Items
.893	27

From the results of the calculation of the reliability test using IBM SPSS 26 of the 27, the questionnaire items obtained r = 0.893. The reliability coefficient was in the classification of 0.80 r 1.00. The items in the questionnaire were reliable with very high interpretations.

RESULTS AND DISCUSSION

The results of the analysis on the improvement of students' critical thinking skills in social science learning who received learning with the PBL model and the Inquiry model with the N Gain test are shown in Table 6.

Table 6. Improving Critical Thinking Ability

No	Class	Score		N-Gain	Criteria
		Pretest	Posttest		
1	Experiment Class A (PBL Model)	61	81	0.7	currently
2	Experiment Class B (Inquiry Model)	62	74	0.4	low

Based on the results Table 6 of the N-Gain test, it can be concluded that the PBL model can improve the students' critical thinking skills better than the Inquiry model.

The results of the analysis on the differences in the improvement of students' critical thinking skills in social science learning who received learning using the PBL model and the inquiry model with two-way ANOVA can be seen in Table 7 below.

Table 7. Differences in Critical Thinking Skills

No	Learning Models	Mean Interest to Learn			N			Std. Deviation		
		High	*Medium*	*Low*	*High*	*Medium*	*Low*	*High*	*Medium*	*Low*
1	PBL Model	58.3333	45.9524	48.7500	6	14	4	16.66667	17.26705	12.99038
2	Inquiry model	67.1111	21.8254	23.3571	5	15	5	10.05502	8.97569	14.09832
	Total	62.3232	33.4729	34.6429	11	29	9	14.15428	18.14538	18.48710

Based on Table 7, the average value of the critical thinking of students who had high interest to learn social studies using the PBL model was 58.333, while the average value of those using the Inquiry model was 67.1111. The average value of critical thinking of students who had moderate interest in learning social studies using the PBL model was 45.9524, while the average value of those using the Inquiry model was 21.8254. The average value of critical thinking of students who had low iznterest in learning social studies using the PBL model was 48.7500, while the average value of those using the Inquiry model was 23.3571. The average value of the PBL model was 49.5139 while the average value of the Inquiry model was 31.1889. The PBL model was considered better than the Inquiry model in improving critical thinking skills in social science learning for fifth grade students.

The results of the analysis on the differences in students' critical thinking skills in social science learning who have high, medium, and low learning interest with the PBL model and the Inquiry model with the post hoc test can be seen in Table 8 below.

Table 8. Differences in Critical Thinking Ability with Post hoc Test

Learning Interest	Learning Interest	Mean Difference	Std. Error	Sig.	Lower Bound	Uper Bound
High	Medium	28.8503*	4.85961	.000	17.0539	40.6467
	Low	27.6804*	6.16828	.000	12.7072	42.6535
Medium	High	-28.8503*	4.85961	.000	-40.6467	-17.0539
	Low	-1.1700	5.23647	.973	-13.8812	11.5413
Low	High	-27.6804*	6.16828	.000	-42.6535	-12.7072
	Medium	1.1700	5.23647	.973	-11.5413	13.8812

Based on Table 8, that the average value of critical thinking skills of students in social science using the PBL model and the Inquiry model in terms of student learning interest is as follows: a) high learning interest with moderate learning interest with a sig value of 0.000 <0.005, there is a significant difference between students' learning interest in the PBL model and the Inquiry model; b) high interest in learning with low interest in learning with a sig value of 0.000 <0.005, there is a significant difference between students' interest in learning in the PBL model and the Inquiry model; c) moderate learning interest with high learning interest with a sig value of 0.000 <0.005, there is a significant difference between students' interest in learning in the PBL model and the Inquiry model; d) moderate learning interest with low learning interest with a sig value of 0.973> 0.005, there is no significant difference between students' interest in learning in the PBL model and the Inquiry model; e) low

learning interest with high learning interest with a sig value of 0.000 <0.005, there is a significant difference between students' interest in learning in the PBL model and the Inquiry model; f) low learning interest with moderate learning interest with a sig value of 0.973> 0.005, there is no significant difference between students' interest in learning in the PBL model and the Inquiry model.

The results of the analysis to find out the interaction effect between the PBL model and the Inquiry model together on increasing critical thinking in social science learning in elementary school with the two-way ANOVA test can be seen in Table 9 below:

Table 9. Results of the Interaction Effect Analysis of the PBL Model and the Inquiry Model

Source	Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	12832.352[a]	5	2566.470	13.627	.000
Intercept	73735.317	1	73735.317	391.509	.000
Learning Model	1738.565	1	1738.565	9.231	.004
Learning Interest	6826.267	2	3413.133	18.123	.000
Learning Model*Learning Interest	2336.607	2	1168.304	6.203	.004
Error	8098.449	43	188.336		
Total	99976.570	49			
Corrected Total	20930.801	48			

Based on Table 9, the sign value in the learning model is 0.004 less than the alpha value of 0.005 or 0.000 <0.005, meaning that there is a significant difference between the PBL model and the Inquiry model. The sign value on interest in learning among students in social science learning who use the PBL model with the inquiry model is 0.000 less than the alpha value of 0.005 or 0.000 <0.005, meaning that there is a significant difference in learning interest. The sign value on the learning and interest model of 0.004 is less than the alpha value of 0.005 or 0.000 <0.005, meaning that there is an interaction effect between the PBL model and the Inquiry model with students' interest in learning on critical thinking skills.

The learning model has an important role in achieving learning objectives. Teachers can design the learning process by using learning models in organizing learning experiences to achieve learning objectives (Suprihatiningrum, 2013). The PBL and Inquiry models are constructivist learning that require students to build their own knowledge through active student involvement in group work to solve problems. Knowledge gained through their own experience will be remembered longer and will be better understood by students (Hasanuddin, 2020; Bruner, 1960).

The improvement of critical thinking skills in social science learning through the PBL model is higher than the Inquiry model. According to Tan (2021), the PBL model can help students to improve the development of lifelong learning skills in an open, reflective, critical, and active learning mindset, as well as facilitate successful problem solving, communication, group work, and interpersonal skills better than other models. In addition, the PBL model is effective in developing critical thinking skills of elementary school students (Saputra, et al., 2019; Siew & Mapeala, 2016).

The results of the analysis have shown that there is a significant difference between students who learn using the PBL model and those who learn using the Inquiry model. As explained by Taar and Palojoki (2022), in the process of development, students need other

people to understand something and solve the problems they face. In the PBL model, the teacher plays a direct role in learning activities as a facilitator, while in the Inquiry model the teacher acts as a companion where students are given the freedom to work independently to find something new. The PBL model learning process is based on several modern learning insights, including constructive, self-directed, collaborative, and contextual learning (Magdalena, Mulyani & Susanti, 2014). The PBL learning model does not only emphasize problem solving independently, but emphasizes the importance of collaborating in team work.

Based on the results of the analysis, there are significant differences in students' critical thinking skills in social science learning who have high, medium, and low interest in learning with the PBL model and the inquiry model. Haryanti (2017) argues that students with no interest in learning the problems being studied have difficulty in solving problems, so they will find it difficult to try. It is in line with the results of a study by Permatasari, Gunarhadi, and Riyadi (2018) that the PBL model and interest in learning have a significant influence on social science learning in elementary schools.

The results of the analysis show that there is an interaction effect between the PBL model and the Inquiry model to increase critical thinking in social science learning in elementary school. Gardner (2022) states that the PBL model has the following characteristics: (1) posing a problem or question that is socially important, and personally meaningful to students because it corresponds to authentic real life, avoids simple answers, and allows for various solutions to the situation; (2) focusing on the interrelationships between various disciplines; (3) providing authentic inquiry in which students analyze and define problems, develop hypotheses and make predictions, collect and analyze information, conduct experiments, make inferences and formulate conclusions; and (4) producing a product or work and displaying it.

According to Suryanti, Arifin, and Baginda (2018), the Inquiry model is quite effective in training the students' critical thinking skills. Students' critical thinking skills must be continuously trained on appropriate materials or topics. Susanto (2016) states that social science develops concepts of thought based on a reality of social conditions that exist in the student's environment. The learning process must be student-centered so that it will be easy to increase student interest in learning (Hamdi, 2015). The essence of social science learning is to produce a source of meaningful work for elementary school students (Muetterties, Slocum & Masterson, 2020).

CONCLUSION

The results showed that the implementation of the PBL model in social science learning was quite effective in improving critical thinking skills compared to the Inquiry model. The highest critical thinking ability was obtained by students who had high learning interest in social science learning. Thus, the implementation of the PBL model helped students practice their critical thinking skills on each indicator. This research contributed differently to the improvement of the social science learning process to acquire one of the 21st century thinking skills. This study suggests that, for the future research, it is necessary to use analytical techniques and adding a more authentic description test instrument.

REFERENCES

Arends, R. (2008). *Learning to Teach*. Jogjakarta: Pustaka Pelajar.

Ariyani, O.W., & Prasetyo, T. (2021). Efektivitas Model Pembelajaran *Problem Based Learning* dan *Problem Solving* terhadap Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Basicedu*, 5(3), 1149-1160.

Bruner, J. (1960). *The process of education*. Cambridge: MA Harvard University Press.

Chusni, M.M., Saputro, S., Suranto, & Rahardjo, S.B. (2021). The potential of curriculum 2013 in improving critical thinking skills and entrepreneurship competency: Case study in Indonesia. *Journal of Entrepreneurship Education*, *24*(1), 1-6.

Danis, A. (2020). Pengaruh Strategi Pembelajaran dan Gaya Belajar Terhadap Hasil Belajar Ilmu Pengetahuan Sosial (IPS) Siswa Di Kelas V SD Permata Amanda Medan. *Bina Gogik*, *7*(1), 1-11.

Duffy, L. N., Stone, G. A., Townsend, J., & Cathey, J. (2022). Rethinking curriculum internationalization: Virtual exchange as a means to attaining global competencies, developing critical thinking, and experiencing transformative learning. *SCHOLE: A Journal of Leisure Studies and Recreation Education*, *37*(1-2), 11-25.

Fajari, L. E. W. (2021). Critical thinking skills and their impacts on elementary school students. *Malaysian Journal of Learning and Instruction*, *18*(2), 161-187. https://doi.org/10.32890/mjli2021.18.2.6.

Fatmaryanti, S. D., Pratiwi, U., Akhdinirwanto, R. W., & Sulisworo, D. (2022). A Task Model for Supporting Virtual Laboratory Based on Inquiry Skills, Social and Scientific Communication. *International Journal of Evaluation and Research in Education*, *11*(1), 385-391.

Gardner, S. (2022). *Exploring Student Engagement in History and Social Studies in Problem-Based Learning* (Doctoral dissertation, Northeastern University).

Glazer. (2001). Problem *Based Instruction. In M. Orey (ED), Emerging Perspective on learning, teching, and technology*. (Online) Retrived From. http//www.coe.uga.edu/epltt/ProblemBasedInstruct.htm.

Gürler, S. A. (2022). State of Prediction of the Critical Thinking Dispositions of Primary School Teacher Candidates through their Self-efficacy for STEM Practices. *Participatory Educational Research (PER)*, *9*(3), 61-81.

Hamdi. (2015). *Pengembangan dan Penerapan Modul Pembelajaran Materi Teori Dasar dan Bentuk Muka Bumi Untuk Meningkatkan Kognitif Mahasiswa Pendidikan MIPA FKIP UNIGHA Sigli*. Banda Aceh: Universitas Syiah Kuala.

Hamzah., Tambak, S., Hamzah, M. L., Purwati, A. A., Irawan, Y., & Umam, M. I. H. (2022). Effectiveness of blended learning model based on problem-basedlearning in Islamic studies course. *International Journal of Instruction*, *15*(2), 775-792. https://doi.org/10.29333/iji.2022.15242a

Haryanti, Y. D. (2017). Model *Problem Based Learning* Membangun Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Cakrawala Pendas*, *3*(2), 57-63.

Hasanuddin, M. I. (2020). Pengetahuan Awal (*Prior Knowledge*): Konsep dan Implikasi dalam Pembelajaran. *Jurnal Edukasi dan Sains*, *2*(2), 217-232.

Hendriana, H., Rohaeti, E.E., & Sumarmo, U. (2017). *Hard skills dan soft skills matematik siswa*. Bandung: Refika Aditama.

Hermanto, Japar. A, Utomo, E. (2019). Implementasi Pembelajaran Ilmu Pengetahuan Sosial (IPS) dalam Membentuk Karakter Siswa. *Auladuna: Jurnal Pendidikan Dasar Islam*, *6*(1), 1-6. DOI: https://doi.org/10.24252/auladuna.v6i1a1.2019.

Hidayati, N., Zubaidah, S., & Amnah, S. (2022). The PBL vs Digital Mind Maps Integrated PBL: Choosing Between the two with a view to Enhance Learners' Critical Thinking. *Participatory Educational Research (PER)*, *9*(3), 330-343.

Hidayatullah, R.S., Ulya, H., & Pratiwi, I.A. (2022). Analisis Kemampuan Berpikir Kritis Siswa Kelas V Ditinjau dari Perbedaan Jenis Kelamin pada Materi Volume Bangun Ruang Kubus dan Balok. *Jurnal Ilmiah Ilmu Pendidikan, 5*(3), 785-792.

Huang, Y. (2022). Effectiveness of inquiry-based science laboratories for improving teamwork and problem-solving skills and attitudes. *Journal of Research in Science Teaching, 59*(3), 329-357. https://doi.org/10.1002/tea.21729

Huda, A.I.N., & Abduh, M. (2021). Peningkatan Keterampilan Berpikir Kritis Siswa Melalui Model *Problem Based Learning* pada Siswa Sekolah Dasar. *Jurnal Basicedu, 5*(3), 1547-1554.

Irwanto et al. (2018). *Using Inquiry-Based Laboratory Instruction to Improve Critical Thinking and Scientific Process Skills among Preservice Elementary Teachers.* Eurasian Journal of Educational Research, 80, 151-170.

Johnson, S. A., & Cuevas, J. (2016). The Effects of Inquiry Project-Based Learning on Student Reading Motivation and Student Perceptions of Inquiry Learning Processes. *Georgia Educational Researcher, 13*(1). DOI: 10.20429/ger.2016.130102.

Laliyo, L. A. R., Sumintono, B., & Panigoro, C. (2022). Measuring changes in hydrolysis concept of students taught by inquiry model: stacking and racking analysis techniques in Rasch model. *Heliyon, 8*(3), e09126.

Magdalena, O., Mulyani, S., & Susanti, E.V.H. (2014). Pengaruh Pembelajaran *Model Problem Based Learning* dan *Inquiry* Terhadap Prestasi Belajar Siswa Ditinjau Dari Kreativitas Verbal Pada Materi Hukum Dasar Kimia Kelas X Sman 1 Boyolali Tahun Pelajaran 2013/2014. *Jurnal Pendidikan Kimia* (JPK), *3*(4), 162-169.

Muetterties, C., Slocum, C., & Masterson, E. (2020) What is a Vote Worth? A Focused Inquiry to Scaffold Elementary Historical Thinking. *The Social Studies, 111*(3), 133-142, DOI: 10.1080/00377996.2019.1706070.

Nafiah, Y. N., & Suyanto, W. (2014). Penerapan Model Problem-Based Learning Untuk Meningkatkan Keterampilan Berpikir Kritis dan Hasil Belajar Siswa. *Jurnal Pendidikan Vokasi, 4*(1), 125-143. DOI: https://doi.org/10.21831/jpv.v4i1.2540.

Nugraheni, L. Suyitno., Waluyo, H.J, & Wardani, NE (2022). The influence of wayang beber (The Legend of Wasis Joyokusumo) as a character-based learning media on students' critical thinking ability. *International Journal of Instruction, 15*(3), 267-290.

Palupi, N.D., Meifilina, A., & Harumike, Y. D. N. (2020). The Effect of Using Tiktok Applications on Self-Confidence Levels: (Study on Communication Science Students of Balitar Islamic University, Class of 2016-2020). *JOSAR (Journal of Students Academic Research), 5*(2), 66-74. https://doi.org/10.35457/josar.v5i2.1151.

Permatasari, B. D., Gunarhadi, & Riyadi. (2019). The influence of problem based learning towards social science learning outcomes viewed from learning interest. *International Journal of Evaluation and Research in Education, 8*(1), 39–46. https://doi.org/10.11591/ijere.v8i1.15594.

Preston, L., Harvie, K., & Wallace, H. (2015). Inquiry-based Learning in Teacher Education: A Primary Humanities Example. *Australian Journal of Teacher Education, 40*(12). http://dx.doi.org/10.14221/ajte.2015v40n12.6

Putri, D. R., & Ngabekti, S. (2021). The Development of Green Science Board Game (Greecebome) Media on Environmental Pollution toward Student Interest in Learning. *Journal of Environmental and Science Education, 1*(1), 20-31.

Riwahyudin, A. (2015). Pengaruh Sikap Siswa dan Minat Belajar Siswa Terhadap Hasil Belajar IPA Siswa Kelas V Sekolah Dasar Di Kabupaten Lamandau. *Jurnal Pendidikan Dasar, 6*(1), 11 - 23. https://doi.org/10.21009/JPD.061.02.

Russell III, W.B., Waters, S., Turner, T. N. (2017). *Essentials of Elementary Social Studies*. New York: Routledge.

Saleh, A., Phillips, T. M., Hmelo-Silver, C. E., Glazewski, K. D., Mott, B. W., & Lester, J. C. (2022). A learning analytics approach towards understanding collaborative inquiry in a problem-based learning environment. *British Journal of Educational Technology*, *53*, 1321– 1342. https://doi.org/10.1111/bjet.13198

Saputra, M. R. D., & Kuswanto, H. (2019). The Effectiveness of Physics Mobile Learning (PML) with Hombo Batu theme to Improve the Ability of Diagram Representation and Critical Thinking of Senior High School Students. *International Journal of Instruction, 12*(2), 471-490.https://doi.org/10.29333/iji.2019.12230a.

Siew, N.M., & Mapeala. R. (2016). The Effects of Problem Based Learning with Thinking Maps on Fifth Graders' Science Critical Thinking. *Journal of Baltic Science Education*, *15*(5), 602-616.

Subariyanto, M., Ambarita, A., & Yulianti, D. (2022). Pengembangan E-LKPD Berbasis Discovery Learning Untuk Mengoptimalkan Kemampuan Berpikir Kritis Peserta didik SD. *Elementary: Jurnal Ilmiah Pendidikan Dasar*, 8(1), 77-92. Retrieved from https://e-journal.metrouniv.ac.id/index.php/elementary/article/view/4620.

Sobocan, J., Giancarlo-Gittens, C. A., Groarke, L., Johnson, R. H., Ennis, R. H., Hare, W., & Murphy, S. (2022). *Critical thinking education and assessment*. Windsor Studies in Argumentation.

Suprihatiningrum, J. (2013). *Strategi Pembelajaran Teori dan Aplikasi*. Yogyakarta: AR-RUZZ Media.

Suryanti, Arifin, I.S.Z., & Baginda, U. (2018). The Application of Inquiry Learning to Train Critical Thinking Skills on Light Material of Primary School Students. *IOP Conf. Series: Journal of Physics: Conf.* Doi :10.1088/1742-6596/1108/1/012128.

Susanto, A. (2016). *Teori Belajar & Pembelajaran di Sekolah Dasar*. Jakarta: Prenadamedia Group.

Taar, J., & Palojoki, P. (2022). Applying interthinking for learning 21st-century skills in home economics education. *Learning, Culture and Social Interaction*, *33*, 100615.

Tan, O. S. (2021). *Problem-based learning innovation: Using problems to power learning in the 21st century*. Gale Cengage Learning.

Tanjung, S., Baharuddin, B., Ampera, D., Farihah, F., & Jahidin, I. (2022). Problem Based Learning (PBL) Model with Technological, Pedagogical, and Content Knowledge (TPACK) Approach. *International Journal of Education in Mathematics, Science and Technology*, *10*(3), 740-752. https://doi.org/10.46328/ijemst.2510

Uslu, S. (2020). Critical Thinking Dispositions of Social Studies Teacher Candidates. *Asian Journal of Education and Training*, *6*(1), 72-79. DOI: 10.20448/journal.522.2020.61.72.79.

Wahyuni, N.P.S., Widiastuti, N.L.G.K., & Santika, I.G.N. (2022). Implementasi Metode Examples Non Examples dalam Pembelajaran Daring untuk Meningkatkan Kemampuan Berpikir Kritis Siswa SD. *Jurnal Ilmiah Pendidikan Citra Bakti*, *9*(1), 50-61. https://doi.org/10.38048/jipcb.v9i1.633.

Wibowo, D.C., Peri, M., Awang, I.S., & Rayo, K.M. (2022). Analisis Kemampuan Berpikir Kritis Siswa dalam Menyelesaikan Soal Cerita Pada Mata Pelajaran Matematika. *Jurnal Ilmiah Aquinas*, *5*(1), 152-161.

Wicaksono, Arini E., & Kurniana B. (2016). Pelaksanaan Evaluasi Pembelajaran IPS Berbassis KTSP Kelas V. Jurnal Kreatif: Jurnal Kependidikan Dasar, *7*(1), 54-62. DOI: https://doi.org/10.15294/kreatif.v7i1.9367.

Zuryanty, Kenedi, A. K., Chandra, R., Hamimah, & Fitria, Y. (2019). Problem Based Learning: A way to Improve Critical Thinking Ability of Elementary School Students on Science Learning. *Journal of Physics: Conference Series*, 1424(1). https://doi.org/10.1088/1742-6596/1424/1/012037.