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Implementation of PBL and IBL Models Assisted by Video Media to Improve Critical Thinking Skills

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ABSTRAK

Pengajaran IPS di sekolah dasar tidak hanya menyampaikan teori tetapi juga bentuk nyata implementasi dan permasalahan yang sering muncul di lingkungan sehari-hari. Hal ini dapat mengembangkan pemikiran kritis siswa dalam merekonstruksi peristiwa dan nilai-nilai yang terkandung di dalamnya. Namun media dan metode pembelajaran yang digunakan saat ini belum mampu meningkatkan kemampuan berpikir kritis siswa. Penelitian ini bertujuan untuk menganalisis peningkatkan kemampuan berpikir kritis siswa melalui penerapan model kolaborasi PBL dan IBL menggunakan video. Subyek penelitian adalah siswa sekolah dasar kelas 5 yang berjumlah 30 siswa. Instrumen yang digunakan untuk pengumpulan data dalam penelitian ini adalah tes deskriptif. Teknik analisis data yang digunakan dalam penelitian ini adalah teknik statistik deskriptif. Desain penelitian ini menggunakan penelitian tindakan kelas yang terdiri dari tiga siklus. Hasil penelitian menunjukkan bahwa kemampuan berpikir kritis meningkat pada setiap siklusnya. Pada siklus I kemampuan berpikir kritis 50,33% pada siklus II meningkat menjadi 69,83% dan pada siklus III meningkat menjadi 78,38%. Maka kesimpulan dari hasil penelitian ini adalah penerapan model PBL dan IBL melalui media video terbukti mampu meningkatkan kemampuan berpikir kritis siswa, dengan demikian terbukti bahwa integrasi antara model pembelajaran inovatif dengan media pembelajaran berkontribusi positif terhadap peningkatan kemampuan dan kompetensi siswa.

ABSTRACT

Teaching social science in elementary schools is not only conveying theories but also real forms of implementation and problems that often arise in the daily environment. This is be able to develop students' critical thinking in reconstructing events and the values contained therein. However, the media and learning methods used today have not been able to improve students' critical thinking skills. This study aims to analyse the improvement students' critical thinking skills through the application of collaboration between PBL and IBL models using video. The research subjects were elementary school students who were in grade 5, consisting of 30 students. The instrument used for data collection in this study was a descriptive description test. The data analysis technique used in this research is descriptive statistical technique. This research design uses classroom action research which consists of three cycles. The results showed that critical thinking skills increased in each cycle. In the first cycle, 50.33% of critical thinking skills in the second cycle increased to 69.83% and in the third cycle increased to 78.38%. So the conclusion from the results of this study is that the implementation of PBL and IBL models through video media is proven to be able to improve students' critical thinking skills, thus, it is proven that the integration between innovative learning models and learning media contributes positively to the improvement of students' abilities and competencies.

1. INTRODUCTION

Critical thinking is related to making good decisions, in order to face various kinds of uncertainty in the future it is important to master these abilities, this is then the background that critical thinking skills become 21st century competencies that must be mastered by every student (Anisa, 2017; Hidayat et al., 2019; Septikasari & Frasandy, 2018). In education, career or life, people who consistently make the best

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decisions will tend to have a high level of success. Therefore, improving students' critical thinking skills is important today, considering that critical thinking skills are very important because it allows students to deal effectively with social, scientific, and practical problems (Crawley et al., 2019; Kivunja, 2014; Susilawati et al., 2020). When students have high critical thinking skills, they will use them to plan and conduct research or projects, solve problems, and make decisions using appropriate digital information, tools and resources (Astuti et al., 2019; Igwe et al., 2021; Purawati et al., 2016). Students who are able to think critically can solve problems effectively either at work or in their personal lives (Amin et al., 2020; Pawar et al., 2020; Purawati et al., 2016).

The change in learning orientation from teacher centered to student centered provides opportunities for students to be more active in learning than teachers (Hussin et al., 2019; Rachmadtullah et al., 2020). Teachers only act as facilitators, motivators, and mentors who provide more opportunities for students to find and process information themselves (Freire et al., 2020; Zhang, 2020). In the end, this transformation process helps students become independent thinkers. Unfortunately, the learning process has not yet occurred in social science learning in elementary schools, social science learning or known as social studies tends to convey theoretical matters as the main material (Heong et al., 2011; Rahiem, 2020; Sugiharto, 2020). While ideal social learning is basically not only knowing and understanding concepts, but being able to develop a decision and solution to the issues faced by students in their living environment (Febyronita & Giyanto, 2016; Putri & Citra, 2019; Widodo et al., 2020). As the implementation of learning in the elementary school where the research location is located, which takes place in one of the elementary schools in Surakarta, it shows that during classroom learning activities, learning tends to be still teacher-centred, where the teacher dominates the process of delivering material through the lecture method so that it seems boring for most of the students. In addition, the use of media and innovative methods also appears not to be maximal, and has not been able to provide a stimulus to increase students' critical thinking skills considering that student involvement tends to be very minimal during learning activities. Based on the results of these initial observations, it seems that students' critical thinking skills in the classroom tend to be included in the low category.

Even though teachers are at the forefront of learning, it must be understood that teachers must be able to develop a learning environment that promotes critical, dynamic, interesting and fun thinking skills (Bahadur & Boodun, 2013; Pratiwi & Meilani, 2018). One alternative that teachers can do is to implement innovative learning models and visual-based learning media. Given that one of the functions of visual learning media is to make it easier for students to understand the material, and students will be able to store subject matter longer when compared to the lecture method (Arisantiani et al., 2017; Fatimah & Santiana, 2017). One of the innovative learning models that can be implemented are the PBL (Problem Based Learning) and IBL (Inquiry Based Learning) models (Beneroso & Robinson, 2022; Fauzan et al., 2017; Pawar et al., 2020). The combination or collaboration of the application of PBL and IBL for learning activities cannot be separated from empirical facts and theoretical facts which show that these two innovative learning models can improve critical thinking skills, and can be applied to any subject as well as at all levels of education, both primary and secondary education. The PBL model is a teaching model that uses real problems as a context for students to learn to think critically and skillfully solve problems and gain knowledge (Khoiriyah & Husamah, 2018; Sari et al., 2019). PBL is widely recommended to improve critical thinking skills because PBL directs students to meaningful learning where students integrate knowledge and skills simultaneously and apply them in relevant contexts (Aufa et al., 2021; Boonprasom & Sintanakul, 2020).

Although PBL has a positive impact on students, it also has weaknesses. PBL only focuses students on solving problems without delving deeper into the knowledge that is essential to their development. Focusing too much on problem solving can prevent students from developing their creative thinking. Therefore the combination with IBL is one solution for learning activities that will really be able to have an impact on increasing students' critical thinking skills. IBL is a learning environment that involves students in learning, formulating questions, investigating, critical thinking, building understanding, meaning, and new knowledge that is used to answer questions or determine problem solutions (Beneroso & Robinson, 2022; Garba et al., 2015; Okolie et al., 2021). If PBL tends to solve problems theoretically, then IBL will improve student learning in practice, so that it can equip students with the skills they need to succeed in the future (Khalaf & Zin, 2018; Murphy et al., 2021; Warfa et al., 2018).

It is in line with previous study that state the collaboration between these models is applied in an environment with rich digital information resources, it will result in learning that is in line with 21st century skills (Gorghiu et al., 2015; Taofiq et al., 2018). Moreover there are other study that try to implement PBL models coupled with the use of video media, that can contribute in improving students' critical thinking skills (Haryanto et al., 2021). This study also show that through video media it can motivate and improve

students' ability to analyze and interpret several issues that arise in the environment and students' daily lives, and are less able to conclude learning outcomes.

This research is important because the use of video media as a supporting tool for the implementation of learning with PBL and IBL methods in order to identify and measure students' critical thinking skills. It is different from the research that has been done by other researchers which only focus on the use of learning models, both PBL and IBL with their effects on students' critical thinking skills. So in this research, it will be used as an innovation for educators not to hesitate in combining various innovative learning models with the use of learning media, be it videos, animations, multimedia, or infographics. Referring to some of the descriptions, analyzes and findings above, this study aims to analyses how the effect of applying a collaborative model between problem based learning (PBL) and inquiry based learning (IBL) assisted by video media in improving critical thinking skills of elementary school students.

2. METHOD

The research method used is Classroom Action Research (Kärner, 2017; Manfra, 2019), this research will consist of three cycles. Each cycle is carried out in two meetings. The improvement of critical thinking skills is measured through each critical thinking indicator which is evaluated at the end of each cycle. Each cycle consists of planning actions, implementing actions, observing and evaluating the results of actions, and doing reflection which is adapted from Kemmis' schema model The phases of this model is shwo in Table 1.

Table 1. Phases of PBL and IBL Collaboration Models Using Video Media

Phase	Teacher Activities
Phase-1 Identification of problems	The teacher displays video shows then presents problems related to the video then motivates students to identify problems and organize students' ideas and prior knowledge to solve problems in groups
Phase-2 Submitting a hypothesis	The teacher conducts a question and answer session about the problem being studied, both what is known and what is not known to students and guides students to make hypotheses
Phase-3 Data collection	The teacher encourages students to collect data from various sources to find various alternatives in solving problems and helps students select relevant information
Phase-4 Constructive Learning	The teacher guides students in processing and analyzing data
Phase-5 Formulation of conclusions	The teacher motivates students to conclude learning outcomes or compare and evaluate whether the problems given at the beginning of learning have been answered by students

The research subjects were elementary school students who were in grade 5, with a total research subject consisting of 30 students. The instrument used for data collection in this study was a descriptive description test. The data analysis technique used in this research is descriptive statistical technique, namely the activity of describing the statistical data collected using non-numeric calculation aspects. Criteria of critical thinking ability is show in Table 2.

Table 2. Criteria for Percentage of Critical Thinking Ability

Value	Criteria
80 < SA ≤ 100	Very good
70 < SA ≤ 79	Good
60 < SA ≤ 69	Enough
≤ 60	Less

3. RESULT AND DISCUSSION

Result

This research procedure uses a classroom action research procedure that consisting several stages namely, planning, implementation, observation, and reflection. The action given is in the form of implementing PBL and IBL collaboration models using video-based learning media. The PBL and IBL collaboration model using video is carried out through five phases. Phase 1 is where students identify

problems; phase 2 is to propose a hypothesis; phase 3 is collecting data; phase 4, namely constructive learning; phase 5 is to formulate conclusions as shown in table 1. Meanwhile, students' critical thinking skills are obtained through an assessment of five critical thinking indicators, namely 1) analyzing; 2) argue; 3) interpret; 4) evaluate; and 5) conclude. The phase of cycle 1 result is show in Table 3.

Table 3. Cycle I Results

No	Indicator	Cycle I
1	Analyze	51,38%
2	Argue	48,88%
3	Interpret	53,61%
4	Evaluate	50,55%
5	Conclude	47,22%
	Average	**50,33%**

Base on Table 3, the data from the assessment of students' critical thinking skills in the first cycle obtained the percentage of classical completeness of critical thinking skills of 50.33% which indicates that students' critical thinking skills are lacking. Although students' critical thinking skills are still said to be less critical, the results have increased compared to the pre-cycle results. Increased critical thinking skills reached 36.02%. Students who are included in the fairly critical category are 9 students and 21 students are in the less critical category. So it can be concluded that in the first cycle it is necessary to increase the aspects of critical thinking skills. The phase of cycle 2 result is show in Table 4.

Table 4. Cycle II Results

No	Indicator	Cycle II
1	Analyze	67,77%
2	Argue	72,77%
3	Interpret	69,44%
4	Evaluate	73,61%
5	Conclude	65,55%
	Average	**69,83%**

Base on Table 4, implementation of cycle II was carried out in two meetings. To increase student activity, the teacher gives more questions so as to encourage students to always be involved in learning. The teacher also encourages student activity in group discussions so that all group members take part in the discussion and presentation of the results of the discussion. The results of the implementation of the second cycle have increased. The indicators that were previously still low show an increase. The score of critical thinking skills in the second cycle increased by 38.74% compared to the first cycle. The classical mastery of critical thinking skills obtained a score of 69.83%. Students who are included in the very high category are 6 students, the high category are 14 students, and the moderate category is 10 students. The data shows that the students' thinking ability is quite critical. The phase of cycle 3 result is show in Table 5.

Table 5. Cycle III Results

No	Indicator	Cycle III
1	Analyze	79,16%
2	Argue	78,33%
3	Interpret	77,50%
4	Evaluate	81,38%
5	Conclude	75,55%
	Average	**78,38%**

Base on Table 5, the acquisition score data in the third cycle increased by 10.55% compared to the second cycle. The percentage of classical mastery of critical thinking skills is 81.38%. Of the 30 students, which are included in the very high category, namely 16 students, the high category is 13 students, and only 1 student is in the sufficient category. These results indicate that all indicators have met the criteria and are in the very good category. Based on these results, it can be concluded that the students have implemented the learning model well. It is proven by the results of the students' critical thinking ability scores in the good

and very good categories. The overall data presentation of this classroom action research starting from pre-cycle, cycle I, cycle II, and cycle III will be illustrated in Figure 1 and describe in Table 6.

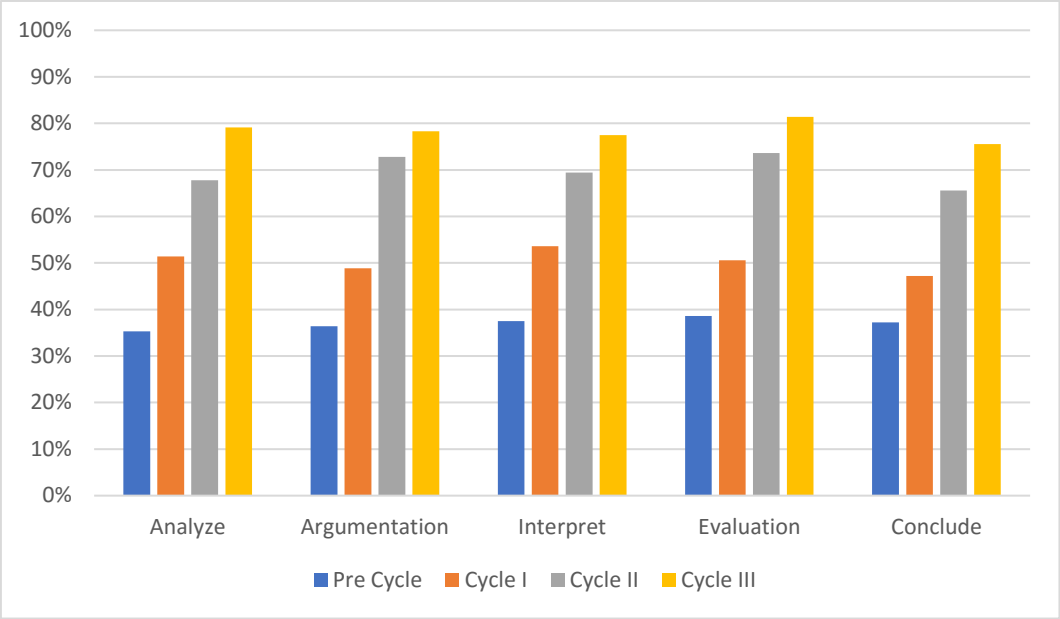

Figure 1. Percentage of Critical Thinking Ability

Table 6. Percentage of Improvement in Critical Thinking Ability

No	Indicator	Pre Cycle	Cycle I	Cycle II	Cycle III
1	Analyze	35,27%	51,38%	67,77%	79,16%
2	Argue	36,38%	48,88%	72,77%	78,33%
3	Interpret	37,50%	53,61%	69,44%	77,50%
4	Evaluate	38,61%	50,55%	73,61%	81,38%
5	Conclude	37,22%	47,22%	65,55%	75,55%
	Average	37,00%	50,33%	69,83%	78,38%

Discussion

The application of the PBL and IBL collaboration model using video in social science learning can be said to be running smoothly. The results obtained also indicate that this learning is able to improve students' critical thinking skills through improvements in each cycle. Learning begins with the teacher conveying the learning objectives with the PBL and IBL collaboration model using video. The teacher presents the problems that will be studied by students. Students in groups observe the problem and then identify the problem. The problems presented are not abstract but real world problems so that they help students become active learners because this knowledge can be applied in their lives or in accordance with their experiences (Pawar et al., 2020; Szabo et al., 2020). Learning continues with students formulating hypotheses or temporary answers to problems. The teacher acts as a motivator and facilitator for students, helping students who have difficulty in making hypotheses. After that, students collect the data needed to test the hypotheses that have been made previously. After the data is collected, students construct the data in order to test hypotheses and solve problems. Problems are solved in groups with the help of directions from the teacher (Hendarwati et al., 2021; Jonassen, 2011). The lesson ends by concluding the results of the discussion so that it can be seen whether students can solve the problem being studied or not.

Based on the scores obtained in the first cycle (cycle I), it showed that the students' thinking ability is still low. The indicator with the lowest achievement is concluding the results of the discussion. Students have difficulty concluding the results of the discussion so that the teacher is more dominant in concluding the results of the discussion. Cycle II was conducted in two meetings. The teacher fixes the problematic learning process in cycle I. To increase student activity, the teacher encourages student involvement in group discussions and asks students questions. The results of the implementation of the second cycle showed a better improvement. Critical thinking indicators that were previously low have increased. The results of the implementation of cycle III showed that students' critical thinking skills increased and were in the high or good category. It can be concluded that the PBL and IBL collaboration model using video can

improve students' critical thinking skills in learning social knowledge. This result is reinforced by previous research that applied PBL and IBL collaboration which also showed positive results on classroom learning. PBL can be used to improve IBL learning and the process of teaching 21st century skills (Hendarwati et al., 2021; Kang, 2022). The results showed that PBL has the potential to improve the IBL environment through its ability to adapt to the complexities of contemporary learning contexts (Amin et al., 2020; Nunaki et al., 2019; Suhirman et al., 2020).

The use of video media in this study had a positive effect on student interest (Pearson et al., 2011; Styowati & Utami, 2022). Basically, students' interest in social learning is low because the learning tends to be considered boring. The method that is often used is varied lectures with the help of powerpoint. Social science learning if only presented orally will give an abstract picture to students. Students must be shown in a tangible form that can be seen directly by students so that it creates a sense of interest in students (Arthur et al., 2019; Novita et al., 2019). When the teacher showed the video, the students looked enthusiastic and focused on watching the video. Then when the teacher asked things about the video, the students were also enthusiastic about answering the teacher's questions. Videos help teachers visualize various abstract theories and applications in students' daily lives (Hapsari et al., 2019; Mpungose, 2021). Based on the results of this study, it can be concluded that videos are able to increase students' curiosity in learning social science so that students think more deeply to satisfy their curiosity.

Critical thinking applied in this learning helps students conduct investigations to solve problems. Problem solving by students is getting better in each cycle. This indicates that students have trained their critical thinking skills to solve problems. Students who are able to think critically are able to understand a problem more deeply so that they can solve problems effectively (Amin et al., 2020; Rahman, 2019). The implementation of critical thinking aspects shows positive results. The application of the PBL and IBL collaboration model using video has an effect on students' critical thinking skills. Students are able to analyze and interpret problems based on the evidence they have collected. Student activity also increases because students become brave to argue or express opinions both orally and in writing. Through group discussions, students are able to assess the solution to the problem they have chosen and are able to conclude the results of the discussions they have done. Analytical thinking, problem solving exercises, decision making, and judgment to arrive at logical, rational, and reasonable problem solutions demonstrate critical thinking (Damaianti et al., 2020; Rahman, 2019; Ware & Rohaeti, 2018).

This finding is in accordance with previous studies on the same topic. The application of PBL and IBL models has been proven to be able to improve critical thinking skills. Previous study states that PBL is effective in developing critical thinking through stimulating student interest, and creating meaningful discussions (Tusriyanto et al., 2019). Other research also shows that the application of PBL has a positive impact on increasing students' critical thinking skills (Aufa et al., 2021). In addition, the application of PBL can also significantly improve the development of students' metacognition, thus students are not only experts in solving problems but also experts in the problem solving process. Based on previous studies, the IBL model also influences the development of students' critical thinking skills (Amanati, 2020). The other study state that IBL model can improve knowledge, critical thinking skills, and decision-making abilities, considering that during learning activities students are able to develop problem-solving skills and meaningful learning (Rahmi et al., 2019). The application of IBL will be able to make students able to engage in higher levels of thinking and cognitive reasoning because students themselves determine the methods, strategies and topics that need to be investigated to formulate problem solutions. That way, students' critical thinking skills will automatically increase.

However, this research is still limited to the scope of a small class scale, considering the use of research methods that are only classroom action research so that the number of research subjects tends to be small. Therefore, the results of this study certainly cannot be generalized if the use of PBL and IBL assisted by video media is effective in improving students' critical thinking skills. Further research is needed with different research methods and in a wider scope of research subjects. In addition, it is considered necessary to examine the use of media and other innovative learning models so that they will be able to open up the insight of educators to innovate the application of innovative learning models that are assisted or integrated with learning media.

4. CONCLUSION

Based on the results of the research that has been carried out, it can be concluded that the application of the PBL and IBL collaboration model using video can improve students' critical thinking skills. The results of this study answer the formulation or achieve the research objectives. The success of increasing students' critical thinking skills certainly cannot be separated from the processes that occur in each cycle and the characteristics of the learning models, both PBL and IBL. The two learning models are

considered very suitable and are often used by researchers to stimulate students' critical thinking skills, although the learning media factors that contribute to this research cannot be eliminated. It is hoped that teachers and other researchers can use this research to pave the way for other research on the application of learning models in improving the competencies needed in the 21st century, not only critical thinking skills but problem solving, communication, computational thinking, innovation, and collaboration.

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