Implementation of Problem Based Learning (PBL) Model to Improve Critical Thinking Skills in PAI Learning

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Abstract

The problem based learning (PBL) learning model is learning that is obtained through a process towards understanding the resolution of a problem. In this learning, it involves students to actively solve problems in learning so that students will gain direct experience in learning activities. The subjects in this study were class VIIIA students, totaling 23 students. The purpose of this study was to analyze the process of teaching and learning activities with the problem-based learning model in PAI learning to improve students' critical thinking skills. The chosen research method is descriptive research with a qualitative approach. Data collection techniques with observation. The results of the research are 1) Researcher observation activities, 2) Researchers carry out the learning process with stages: preliminary activities, core activities, and closing learning activities. The conclusion from the research is that the implementation of the problem based learning (PBL) learning model in PAI learning is very suitable to be implemented in learning activities because this model can improve students' critical thinking skills in learning.

Keywords: *Problem based learning*, critical thinking skills, PAI Learning

A. Introduction

Meaningful learning will bring students to memorable learning experiences. The experience gained by students will be more memorable if the learning process they get is the result of their own understanding and discovery. In this context, students experience and do it themselves. The learning process that takes place involves students fully to formulate a concept for themselves. Teacher involvement only. The learning that is applied to the 2013 curriculum is a scientific approach, namely with several varied learning models that can foster the attractiveness of students in learning activities. Among the recommended learning models, are *problem based learning, discovery learning, project based learning* . Basically, in determining the learning model in learning activities, it is based on the assumption that there are only certain ways of learning that are appropriate to be applied to certain learning models as well. There are various learning models, but it is not mandatory to use all of them. One of the learning models that are close to expectations is the *problem-based learning model* . This learning model is assumed to improve students' critical thinking skills.

There are several works that have examined the *problem-based learning model* . Lately there has been a lot of research on the importance of the *problem-based learning model* to improve students' critical thinking skills . The journal written by Eka Yulianti and Indra Gunawan entitled *Problem based learning model* its effect on conceptual understanding and critical thinking (Indonesian Journal of Science and Mathematics Education). In this journal, the authors want to find out how the effectiveness of the problem based learning (PBL) learning model on conceptual understanding and critical thinking of high school students in the subject matter of temperature and heat. The subjects in this study were 70 students in class X SMA N 1 Waway Karya, Lampung Timur . Based on the results of the analysis, the results of data analysis using the SPSS 17.00 program show that there is an effect of applying the problem-based learning model on students' conceptual understanding and critical thinking. The gain in understanding the concept of the experimental class was 0.51 and the gain in the control class was 0.31, while the gain in critical thinking in the experimental class was 0.58 and the gain in the control class was 0.31. The effectiveness of using the PBL model is more effective in increasing students' conceptual understanding and critical thinking, indicated by the effect size value of understanding the concept of 0.36 and the effect size value of critical thinking of 0.66. Besides that, based on the results of the Manova test, both the significance value of understanding the concept and the significance value is less than 0.005 so it can be concluded that there is an influence of the application of the PBL model on conceptual understanding and critical thinking of high school students.(Eka Yulianti and Indra Gunawan, no. 3 (2019): 399–408). Journal written by Assrani Assegaf, Uep Tatang Sontani entitled *Asrani Assegaff and Uep Tatang Sontani, "Efforts to Improve Analytical Thinking Skills Through Problem Based Learning (Pbl) Models,* (Journal of Journal of Office Management Education 20 16). In this journal, the author wants to find out how Students' Analytical Thinking Ability. The researcher concluded that in general the results of the study showed that there was a significant increase in analytical thinking skills between the experimental class using the Problem Based Learning (PBL) model and the control class using the Guide Discovery Learning model. However, the average score of the experimental class was higher than that of the control class. This means that schools can apply the Problem Based Learning (PBL) model to improve students' analytical thinking skills.(Uep Tatang Sontani Asrani Assegaf, (2017): 45–53). Journal written by Azizah Mutiara Syawaly and Muhammad Hayun entitled "The Effect of Applying Problem Based Learning Models on the Mathematical Representational Ability of Elementary School Students," (*instructional* journal 2). In this journal, the author wants to know how representative abilities of students are. It can be concluded that there is an influence of the Problem Based Learning learning model on the mathematical representation ability of fifth grade students at Al-Musyarrofah Islamic Elementary School .(Muhamad and Azizah Mutiara Hayun, 1 (2020): 10). Journal written by Enok Noni Masrinah, Ipin Aripin, and Aden Arif Gaffar, entitled "Problem Based

Learning (PBL) To Improve Critical Thinking Skills," (*National Seminar on Education* (2019)). From the results of the learning activities that have been carried out, and based on all the discussion and analysis that has been carried out, it can be concluded that learning critical thinking skills can be improved through PBL because the learning approach is on authentic problems, and students are not only asked to understand a problem but also have to be able to work together to solve the problem, so as to stimulate students' abilities and skills, especially critical thinking skills.(Phi ; Adawiyah, (2019): 924–932) Journal written by Adawiyah, VR Bektiarso, and S Sudiarti entitled Phi Journal; Adawiyah, VR Bektiarso, and S Sudiarti, "The Effect of Problem Based Learning (PBL) Models with Vee Map on Learning Outcomes and Critical Thinking Skills of High School Students on the Subject of Optical Instruments," (*Journal of Applied Physics and Physics Education* 3). The results of this study indicate that the Problem Based Learning (PBL) learning model with Vee Map has a significant effect on cognitive learning outcomes with a significance value of 0.000 and critical thinking skills of SMA N 1 Leces students with a significance of 0.044.(Phi Journal ; Adawiyah, VR Bektiarso, and S Sudiarti, 2022): 62–67)

In order to improve the quality of education and learning, one way is to choose a method or way of delivering subject matter in order to obtain an increase in students' critical thinking skills, especially Islamic education lessons. for example by guiding students to be actively involved in the learning process and being able to make students develop according to their intellectual level will further strengthen students' understanding of the concepts being taught. This understanding requires the ability to think critically. Without interest, it indicates that students do not have the thinking ability to learn. For this reason, the teacher must provide an injection in learning that involves students actively solving problems so that with that help students can get out of learning difficulties.

Problem Based Learning (PBL) learning model is proven to be able to improve students ' critical thinking skills as shown by several research results. And it can be concluded that the implementation of the *Problem Based Learning learning model* can improve students' critical thinking skills because the concepts presented are in an effort to solve problems, collect data, test hypotheses, and draw conclusions and apply the learning results.

B. Theoritical Review

1. *Problem Based Learning* Learning Model
   a. Definition of *Problem Based Learning Learning Model*

      Problem Based Learning (*Problem Based Learning*) is learning that is obtained through the process towards understanding the resolution of a problem. The problem is met first of all in the learning process. PBL is a form of transition from the teaching paradigm to the learning paradigm, so the focus is on student learning and not on teacher teaching. [1](Huda, M. (2013))

The PBL model has the following basic characteristics: The PBL model has the following characteristics:

(1) ask a question or problem,
(2) focuses on interdisciplinary interrelationships,
(3) authentic inquiry ,
(4) produce products/works and exhibit them, and
(5) cooperation .(Reta, IK (2012))

PBL steps Barret (2005) in Lidinillah (2007) describes the sequence of syntax or steps for implementing PBL as follows.

1) Students are given problems by the teacher (or problems are revealed from student experience
2) Students carry out discussions in small groups
3) Students carry out studies independently related to the problem to be solved. They can do this by looking for sources in libraries, databases, the internet, personal sources or making observations
4) Students return to the original PBL group to exchange information, learn from peers, and work together to solve problems
5) Students present the solutions they find
6) Students are assisted by teachers to carry out evaluations related to all learning activities. This includes the extent to which knowledge has been obtained by students and what is the role of each student in the group.(Lidinillah, DAM (2007))

b. The strengths and weaknesses of the *Problem Based Learning method*
   1) The strength of the *Problem Based Learning method*
      a. students are involved in learning activities so that their knowledge is absorbed properly;
      b. students are trained to be able to work together with other students; and - students can get problem solving from various sources. Meanwhile Rerung (2017) added the advantages of PBL as follows:
      c. Students are encouraged to have the ability to solve problems in real situations.
      d. Students have the ability to build their own knowledge through learning activities.
      e. Learning focuses on problems so that material that has nothing to do with students does not need to be studied at that time. This reduces the burden on students to memorize or store information.
      f. Scientific activity occurs in students through group work
      g. Students are used to using knowledge sources both from the library, the internet, interviews and observations. (hamdani. (2011))

2. Lack of Problem Based Learning methods
    a. for students who are lazy, the purpose of the method cannot be achieved.
    b. requires a lot of time and money; and
    c. not all subjects can be applied with this method.
    d. In a class that has a high level of student diversity there will be difficulties in dividing tasks
    e. PBL is not suitable to be implemented in elementary schools because of problems with the ability to work in groups.
    f. PBL usually takes a lot of time
    g. requires the ability of teachers who are able to encourage student work in groups effectively.

Based on the description above as a PBL learning model, it certainly has advantages and disadvantages. The advantages of the PBL model are that it makes education in schools more relevant to life outside of school, trains students' skills to solve problems critically and scientifically and trains students to think critically, analytically, creatively and thoroughly because in the learning process students are trained to highlight problems from various aspects. The drawbacks of the PBL model are that students often find it difficult to determine problems that are appropriate to the level of students' thinking, besides that the PBL model requires a relatively longer time than conventional learning and it is not uncommon for students to face difficulties in learning because in problem-based learning students are required to learn to look for data. , analyze, formulate hypotheses and solve problems. Here the teacher's role is very important in assisting students so that it is hoped that the obstacles encountered by students in the learning process can be overcome.

2. Critical Thinking Skills

Duron simply defines critical thinking as the ability to analyze and evaluate information. critical thinking as the ability to think rationally about what to believe and what to do. critical thinking as a process when someone tries to answer rationally questions that cannot be answered easily while relevant information is not available. A critical thinker is characterized by asking important questions and issues, formulating them clearly, gathering and assessing relevant information, using abstract ideas, being open-minded, and communicating effectively with others.(Duron, R. et al. (2006) 160- 166)

Ennis details the indicators of critical thinking skills which are grouped into five thinking skills. The five indicators of critical thinking are:

1. Elementary clarification (providing a simple explanation),
2. Basic support (building basic skills),
3. Inference (conclude),
4. Advances clarification (make further explanation),
5. Strategies and tactics (strategy and tactics).

Ennis further explained more about the characteristics of critical thinking as follows.

a) Basic operations of reasoning. To think critically, one has the ability to explain, generalize, draw deductive conclusions, formulate other logical steps mentally.

b) Domain-specific knowledge. In dealing with a problem, one must know about the topic or content. To solve a personal conflict, one must have knowledge about the person and with whom the conflict is occurring.

c) Metacognitive knowledge. Effective critical thinking requires a person to monitor when he is trying to really understand an idea, to recognize when he needs new information and to figure out how he can easily collect and study this information.

d) Values, beliefs and dispositions. Thinking critically means making a fair and objective assessment. This means there is a kind of self-belief that thinking really does lead to a solution. It also means that there is a kind of persistent and reflective disposition when thinking. (Ennis, R.H. (1985))

If you look closely at what Ennis said, critical thinking is nothing but the ability to solve problems through an investigation so as to produce very rational conclusions or decisions.

Meanwhile, Inch also develops indicators of critical thinking skills with the following indicators.

1. Question at issue (questions regarding issues);
2. Purpose describes the goals to be achieved;
3. Questions about the problem (question at issue);
4. Assumptions
5. Point of view
6. Information
7. Concepts
8. Interpretation and drawing conclusions (interpretation and inference). Implications and consequences. (Inch, E.S. et.al. (2006)

C. Method

1. Types of research
   This research is a descriptive research with a qualitative method approach or better known as descriptive qualitative. The research used is class observation which aims to improve and find solutions to real and practical problems in improving the process of teaching and learning activities in improving students' critical thinking skills in the classroom. In this study there are several stages of activities that are interrelated and continuous, namely: planning, implementation, observation and results.
2. Research Subjects
   This research is a classroom action research. The research subjects were class VIIIA students at MTs Agung Alim Blado for the 2022/2023 academic year, with a total of 23 students. This research focused on the process of implementing the Problem Based Learning learning model, teacher performance, student activity, and increasing students' problem-solving abilities in solving problems.
3. Data Source and Data Type
   Data sources were obtained from class VIII students at MTs Agung Alim Blado, Blado District, Batang Regency, totaling 23 students, subject teachers and researchers. The type of data is in the form of observation of learning outcomes.
4. Data collection technique
   The observation method is a method used to see and observe changes in social phenomena that grow and develop which can then be made changes to these assessments, for observers to see certain object moments, so as to be able to separate between what is needed and what is not needed.(Margono S. 2007 Hal 159)
   The interview method according to Sugiyono interview is used as a data collection technique when the research will carry out a preliminary study to find problems that must be studied, and also researchers want to know things from respondents that are more in-depth and the number of respondents. (Sugiyono. 2010 Hal 194)
5. Data Analysis Techniques
   The technique used in analyzing the collected data is descriptive qualitative by calculating the percentage of students' ability to answer written tests to find out the results before and after the action is taken. Data analysis in this study through data exposure, and inference from the results of the analysis. To calculate the percentage of student learning outcomes the researcher used the standard "Total achievement score divided by the maximum score multiplied by 100".

D. Results and Discussion

Learning is a process of interaction between students and educators, with learning materials, delivery methods, learning strategies, and learning resources in a learning environment. The whole learning process includes preliminary activities, core activities, and closing learning activities. The data

obtained by the researcher through observation regarding the activities of teachers and students in learning are described in the following table:

Observation Sheet in Applying
Problem Based Learning Learning Model

Details of Teacher Activities		Yes	Not
1	The teacher opens the lesson by greeting	√	
2	Doing Prayer Before Learning Activities	√	
3	Conduct Presence Activities	√	
4	Linking Previous And Current Learning	√	
	Delivering Learning Objectives	√	
6	Motivating Students	√	
7	Convey Steps/Strategy	√	
8	Delivering Material	√	
9	Giving Students the Opportunity to Ask About Learning Materials that are not yet understood	√	
10	Forming Groups, And Distributing LKPD	√	
11	Guiding and observing students in completing discussions	√	
12	Asking Students to Present the Results of Discussion Activities	√	
13	Provide Feedback	√	
14	Presenting Materials for the Next Meeting	√	
15	Presenting Materials for the Next Meeting	√	
16	Doing prayer and closing the lesson	√	

From table 1 the results of observing the implementation of teacher activities in face-to-face learning can be seen, that all activities in the implementation of the problem-based learning model in learning can be carried out. Implementation of teacher activities in face-to-face learning can be carried out as much as 100%. Means that in the implementation of teacher activities can be carried out 16 activities that must be carried out . By looking at the details of the teacher's activities above, it can be seen that the teacher has implemented learning with the *Problem Based Learning learning model* .

Observation sheet students in learning Critical thinking skills Model
Problem based learning

No	Student's name	Indicators of student motivation										**Total score**	**Category**
		1	2	3	4	5	6	7	8	9	10		

		Ask and answer teacher questions	Pay attention to teacher information	Identify the problem	Determine the hypothesis	Design experiments/observations	Conduct experiments / observations	Collect and analyze data	Draw conclusions	Pay close attention to teacher feedback	Doing assignments given independently		
1	Aghla Auladina	1	1	1	1	1	1	1	1	1	1	10	Tall
2	Ahmad Rif'an Alfianto	1	1	0	0	0	1	1	0	0	1	5	Currently
3	Ahsanun Nadia	1	1	0	0	0	1	1	1	0	1	6	Medium
4	David Aprilianto	1	1	0	0	0	1	1	1	0	1	6	Medium
5	Davina Nursyifa Azzah	1	1	1	1	1	1	1	1	0	1	9	Height
6	Dewi Ana Putri	1	1	0	1	0	0	1	1	1	1	7	Medium
7	Fairuz Alda Adilah	1	1	1	1	1	1	1	1	1	1	10	Height
8	Fina Afriliyani	1	1	1	0	0	0	1	1	1	1	7	Currently
9	Hasna' Nazihatunnasiha	1	1	0	0	0	1	1	1	1	1	7	Currently
10	Ibrahim Al Farizi	1	0	0	1	1	0	0	0	0	0	3	Low
11	Kholidul Uma	1	1	1	1	1	0	1	1	1	1	9	Tall
12	Lailatul Fitri	1	1	1	1	1	1	0	0	1	1	8	Tall
13	Maulid	1	1	1	1	1	1	0	1	1	1	9	Tall
14	Melinda Octaviana	1	1	1	1	1	1	0	0	1	1	8	Tall
15	Naila Zahra	1	1	1	1	1	1	0	1	1	1	9	Height
16	Naufal Imtiyaz	1	0	0	1	0	1	0	0	0	0	3	Low
17	Nesya Arsita	1	1	1	1	1	1	0	1	1	1	9	Height
18	Ni`matul Udzma	1	1	1	1	1	1	0	0	1	1	8	Tall
19	Silvi Permatasari	1	0	0	0	0	1	1	0	0	0	3	Low
20	Syafa Tasya Kamila	1	0	0	1	0	1	0	0	0	0	3	Low
21	Syifaul Karomatisyita	1	1	1	1	1	1	0	0	1	1	8	Tall
22	Zaskia Qotrun Nada	1	1	1	1	1	1	1	0	1	1	9	Tall

23	Atina Khusna Mubarok	1	1	1	1	1	1	0	1	1	1	9	Tall
Score every aspect													

Information:
If done score 1
If not done score 0
Category:
Critical thinking skills are low if the total score = 0 – 3
Moderate critical thinking skills if total score = 4 – 7
High critical thinking skills if the total score = 8 – 10

Catatan :

Ketrampilan berpikir kritis rendah 20 %Ketrampilan berpikir kritis sedang 25 %Ketrampilan

From the analysis of student observation data it shows that in learning activities students who already have low critical thinking skills are 20%, students who have medium critical thinking skills are 25% and students who have high critical thinking skills are 55% . So it has reached the target as set on this performance indicator.

From the analysis of observational data, it shows that the learning process carried out is in a good category . From these data it shows that the learning carried out by the teacher (researcher) is good and has reached the target, namely students can already have critical thinking skills. Based on the results of the analysis and description of the research data carried out, the following conclusions are obtained: the application of the *Problem Based Learning learning model has an* effect on improving critical thinking skills. This can be seen from the results of observing the learning process by students with high critical thinking skills

Research from several sources above can be concluded that the application of the *Problem Based Learning model* is very helpful in the teacher's efforts to improve students ' critical thinking skills . Not only that, this model also helps in increasing teacher and student activity, student self-confidence, and the ability to work independently in problem solving.

E. Conclusions

Based on the results of the learning activities that have been carried out and based on the discussion and analysis and description of the research data carried out, the following conclusions are obtained: *Problem based learning learning models* can improve students' critical thinking skills. This can be seen from the results of student observations on learning activities and teacher implementation in learning using the *Problem based learning model*

That the application of the *Problem based learning model* is very helpful in the teacher's efforts to improve students' critical thinking skills . *Problem-based learning* learning model also helps in increasing teacher and student activity, student self-confidence, and the ability to work independently in problem solving.

In order for the teaching and learning process to be more effective and provide more optimal results for students, the following suggestions are conveyed.

1) In implementing the *problem-based learning learning model, sufficient* preparation is needed, so that the teacher must be able to determine or choose topics that can really be applied to the *problem-based learning learning model* in the teaching and learning process so that maximum results are obtained.
2) In order to improve student learning outcomes, teachers should train students more often with various learning models, even at a simple level, where students can later discover new knowledge, acquire concepts and skills, so that students succeed or are able to solve problems. he faced.
3) There needs to be further research, so that innovations in the learning process can be obtained

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