PERFORMANCE ASSESSMENT BASED ON PROBLEM BASED LEARNING AS AN ALTERNATIVE FOR MEASURING CRITICAL THINKING IN JUNIOR HIGH SCHOOL STUDENTS

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ARTICLE INFO	ABSTRACT
	Problem-based learning (PBL) performance assessment involves students directly and can train them to face various problems and find solutions to problems. Science learning in class VIII shows that critical thinking skills are still relatively lacking in the process of discovering concepts in the material and the ability to answer questions based on critical thinking skills. Observation results show that several indicators in the critical thinking dimension are still in sufficient percentages. The PBL syntax embedded in the performance assessment rubric is also integrated with the critical thinking skills component. The purpose of this research is to find out whether PBL-based performance assessment can be used to measure students' critical thinking abilities. This research uses a qualitative research method with a case study approach with descriptive data explanations for VIII D students at SMPN 37 Semarang. The percentage of results shows the lowest value of 50% in the deduction dimension, with activities to determine conclusions and consider the results of problem analysis in each group to answer questions. The percentage of practice shows the highest score of 75% in the inference dimension; familiarization and interpretation with information analysis activities; exploration of information and conditions; identification of information obtained; presentation of solutions and preventive efforts as well as the results of group work.

INTRODUCTION

The new learning paradigm that has been implemented today ensures that learning practices are student-centered. The Pancasila Student Profiles plays the role of guiding all policies and reforms in the Indonesian education system, including learning and assessment (Kemendikbud, 2021). Based on the six Pancasila Student Profiles that have been determined, it is certainly in accordance with the reality of demands in the 21st century. We have come to know this 21st century learning content as the term 4C (Communication, Collaboration, Critical Thinking and Problem Solving, and Creativity and Innovation) (Kasse, 2022) . In daily life, problem solving are routine activities that occur through human life. The ability to solve a problem depends on many factors, including the ability to think critically, where students are able to reason critically objectively in processing information, building relationships between various information, and analyzing information, evaluating and concluding.

Based on several expert opinions regarding the definition of critical thinking, according to Wati (2014) in Putri (2020) critical thinking is an organized process in solving problems that involves mental activity which includes the ability to formulate problems, provide arguments, carry out deduction and induction, carry out evaluations and make decisions. Based on the situation found science learning in VIII D class of SMPN 37 Semarang, students have critical thinking skills that are still relatively lacking in the process of discovering concepts in the material and the ability to answer questions based on critical thinking skills. Students' low critical thinking skills are caused by a lack of discovery of basic concepts from the material and the ability to examine the relationship between the material and solving problems in daily life, which is carried out directly through performance assessments, which were previously rarely implemented in the classroom.

According to Brookfield (2012) in Yulianti (2022), one of the processes of building students' critical thinking skills is involving students in a simulation of real life problems to find new ideas in solving these problems. The critical thinking ability indicators in this research use a review of various research in the field of critical thinking tests, using concepts used in the Watson-Glaser Critical Thinking Appraisal (WGCTA) test which has been used by Brett Elliott (2001) and has also been used by Fajrianthi (2016). In

WGCTA, critical thinking consists of five dimensions, namely Inference, Recognition Assumption, Deduction, Interpretation and Evaluation of arguments.

Problem-based learning (PBL) can provide strength in critical thinking skills and abilities because PBL is able to involve thinking activities that are not just a reasoning process. This is in line with Marsinah's (2019) research. Critical thinking skills can be improved through PBL because the learning approach is based 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 their abilities and skills. student skills, especially critical thinking skills.According to Happy in (Arifin, 2020), PBL is characterized by real-world problems, it's help students be able to learn in a more critical way and develop problem-solving skills and the knowledge they gain. Implementing PBL can help improve students' critical thinking skills, enabling teachers and students to apply each stage of PBL appropriately (Fadilla, 2021). The PBL model also helps students retain the information they receive when interacting directly with problems.

Assessment in education is the process of collecting, processing and interpreting information on student learning outcomes which is used as a basis for making educational decisions. Assessment has a very important role to; (a) provide initial information before learning begins, so that teachers can design learning scenarios appropriately; (b) provide feedback for teachers and students to improve the quality of the learning process; and (c) provide information on the achievement of certain learning objectives. In order for teacher assessments to be effective and meaningful, teachers need to; (1) formulate learning targets that will be assessed clearly, firmly and measurably; (2) ensuring the selected assessment technique is appropriate to each learning target; (3) ensuring that the assessment techniques used are appropriate to current and future student needs (Kemendikbud, 2019).

Performance assessment is an assessment of the gains and application of knowledge, attitudes and skills, which shows students' abilities both in processes and products. The performance assessment instrument is designed before learning takes place taking into account the student's condition and the learning flow in the learning process plan. The writing of this assessment instrument can be expressed in the form of an assessment rubric which contains categories of performance achievements that are likely to occur (Nurfitriani, 2018). It can be concluded that performance assessment is an

assessment that requires students to carry out a task which will later be assessed by the teacher using a rubric (Kurniasih, 2020). Based on the description above, the author conducted research to find out whether PBL-based performance assessment can be used to measure students' critical thinking abilities?

MATERIALS AND METHODS

This research used a qualitative research method with a case study approach with descriptive data explanation. The data in this research were obtained from a case study of VIII D students at SMP N 37 Semarang in the Natural Science Education subject. The steps taken are: Preparing formulation of a performance assessment rubric based on the PBL learning model in measuring critical thinking that currently exists. Based on a review of several studies in the field of critical thinking tests, the author uses the concept in the WGCTA test which was used by Brett Elliott (2001) and has also been used by Fajrianthi (2016). In WGCTA, critical thinking consists of five dimensions, namely Inference, Recognition of Assumptions, Deduction, Interpretation, and Evaluation of Argumentation. Based on these five dimensions, the author created the following indicators. Inference: the ability to assess the accuracy of a conclusion based on the facts presented. Recognition Assumption: the ability to identify information, so that it becomes a recognition or assumption that is used as a basis for thinking. Deduction: the ability to determine conclusions that are made logically referring to the information used by guiding students' experiences. Interpretation: the ability to assess evidence (interpret information) and make decisions based on available data. Evaluation of arguments: the ability to evaluate the strength and relevance of an argument related to a particular problem (Cahyani, 2021).

The instrument developed is a performance assessment rubric for practical assignments and products based on the PBL learning model, through student worksheets. From the results of the assessment based on the performance assessment rubric, values are obtained from the scoring results, and then these values are converted into a scale of hundreds, and converted again into percentile form. The data analysis technique used is qualitative data which includes data reduction, data presentation, and conclusions. The technique for guaranteeing the validity of the data uses theoretical triangulation by testing

the credibility of the data by utilizing theory with the assumption that certain facts cannot be checked for the degree of trustworthiness with one or more theories (Rijali, 2018).

RESULTS AND DISCUSSION

The results of this case study were developed through performance assessment instruments on practical assignments and PBL-based products, through student worksheets as an alternative for measuring critical thinking abilities. The stages in assessing performance assessment activities through LKPD are carried out in groups. The performance assessment stages are based on five dimensions of critical thinking skills, namely Inference, Recognition Assumption, Deduction, Interpretation, and Evaluation of arguments.

The performance assessment that has been developed in the form of a rubric can be used to observe the process of carrying out activities in solving problems. For decision making, four criteria are prepared, namely: (1) students have solved the problem very well (2) students have solved the problem well; (3) students solve problems quite well; (4) students are less able to solve problems. Implementation of activities to measure PBL-based critical thinking skills which were attended by 32 students divided into 6 groups. After the scoring was carried out, the following results were obtained.

Table 1. Percentage of scoring results based on dimensions of critical thinking ability.

Dimensions of Critical Thinking	Group Score					
	1	2	3	4	5	6
Inference/Conclusion	62%	62%	75%	75%	75%	75%
Recognition, Assumption	58%	58%	75%	75%	75%	75%
Deduction	50%	58%	50%	75%	75%	66%
Dimensions of Critical Thinking	Group Score					
	1	2	3	4	5	6
Evaluation	58%	75%	58%	75%	75%	58%
Total	57%	65%	65%	75%	75%	69%

Presentation category:
P = 76-100% : very good
P = 51-75%   : good
P = 26-50%   : sufficient
P = 0-25%   : less

The inference or conclusion dimension begins with problem orientation activities for students, where students are able to differentiate between truth and error regarding conclusions from the data that has been presented. In this question, students show results in the good category with a percentage of 6% and 75%, where students can analyze information based on the facts contained in the video and are able to provide conclusions based on the facts found. Critical thinking is actually a person's mental activity in collecting, categorize, analyze, and evaluate information or evidence in an effort to draw conclusions to solve certain problems (Amir, 2015). Assessment items are developed in the recognition assumption dimension as a means of organizing students to learn, with activities that consider the use of information data sources as a basis for thinking. In this item, students show good categories with percentages of 58% and 75%, where students explore information and conditions found in daily life in accordance with the problems in each group, identify the information obtained, and have basic assumptions as a basis for thinking.

The deduction dimension is the ability to determine conclusions that are made logically referring to the information used by guiding students' experiences individually and in groups. In this item students show a good category with a percentage of 50% - 75%, where students determine conclusions based on data from video analysis at the beginning with exploration activities of information and conditions found in daily life according to the problems in each group, compiling a poster framework based on conclusions that have been reached, and taking responsibility for the conclusions that have been drawn. The interpretation dimension by students shows a good category with a percentage of 62% and 75%, where students are able to develop and present their work through interpreting information regarding solutions to problems prepared through the creation of posters and presentations. The dimension of evaluating arguments is the ability to evaluate arguments related to problem solutions. In this item, students show good results categories with percentages of 58% and 75%, where students review the results of data presentation in each group, conduct discussions between groups, and making conclusions together regarding problem solving in each group.

The results of the performance assessment product in the six groups show the good category. The assessment in each group shows the ability to think critically by fulfilling the indicators, namely considering the use of information data sources so that they are

able to distinguish right from wrong regarding conclusions from the data that has been presented, as a basis for thinking, able to determine conclusions logically based on the available information, able to interpret information in providing a solution to a problem, and evaluating arguments related to the solution of a problem. Although the abilities shown by this student are not completely perfect.

The implementation of the process activities in the performance assessment certainly produces a product that becomes an assessment in measuring the presentation of data on PBL-based critical thinking skills. After the scoring was carried out, the following results were obtained.

Table 2. Poster product value

Group	Product Assesment Score
Group 1	82
Group 2	86
Group 3	88
Group 4	85
Group 5	90
Group 6	84

Based on the table above, it shows that products of VIII D students in a good category. There are several important aspects that are used as an assessment related to practical performance assessment on this poster product, namely; (1) the content is in accordance with the themes that have been divided into each group; (2) conformity of content with theory; (3) use of good and interesting language; (4) the presentation between images, text and background is clear; (5) suitability of the colors used; (6) appropriate layout; (7) supporting images that are relevant and of good quality; and (8) the information presented is clear, the message conveyed is easy for readers to understand.

Performance assessment is an assessment that asks students to demonstrate and apply knowledge in context accordance with established criteria. Performance assessment for students includes competencies, skills and attitudes (Isnaini, 2020). In performance assessment, the teacher observes and makes judgments about students' skills or competencies in carrying out work, creating products, and making presentations. Performance assessment is a form of authentic assessment, namely an assessment of abilities or a reflection of students' ability to carry out tasks in real situations (Firman, 2018). The activities in performance assessment include two main activities, namely: 1)

observation during performance or skill demonstrations and 2) assessment of the results of the performance tasks given (Kemendikbud, 2019).

PBL-based performance assessment involves students directly and can train students to face various problems and find solutions to these problems both individually and in groups (Handayani, 2023). The PBL syntax embedded in the performance assessment rubric is also integrated with the critical thinking ability component. Student activities in PBL-based performance assessment include student orientation towards problems, organizing students to learn, guiding student experiences, developing and presenting work results, and analyzing and evaluating the problem solving process. The performance assessment rubric used allows students to engage with critical thinking skills. PBL is designed to help students mentally process information and gain their own knowledge about actual events around them. PBL helps students develop critical thinking skills. Students are challenged to develop truly optimal thinking skills through systematic group work, and students continue to strengthen, refine, test and develop their thinking skills (Ayunda, 2023).

The advantages of critical thinking skills include helping students understand concepts easily, sensitivity to problems that occur so that they have the ability to understand problems, solve problems, and the ability to apply concepts to various situations. Critical thinking skills are needed to be able to sort and choose information wisely. A person can possess these skills if they are fostered in a learning environment that facilitates them (Marsinah, 2023). A person is said to have thought critically if they experience the following eight characteristics: (1) knowing the issue, problem, activity or decision being considered; (2) knowing the perspective of the problem; (3) explain an event; (4) make assumptions; (5) use clear and effective language; (6) prove assumptions; (7) make conclusions; and (8) knowing the consequences of the decisions taken (Retno, 2018).

Based on this description, to measure critical thinking skills, of course it is not enough to just provide a written assessment, because critical thinking requires activities that students need to carry out. This is in accordance with Fisher's (2009) opinion that critical thinking is a skilled activity that requires interpretation and evaluation of the results of observations, communication and other sources of information and requires

skills in thinking about assumptions, asking relevant questions, drawing implications and debating issues continuously to reach a decision.

CONCLUSION

PBL-based performance assessment involves students directly and can train students to face various problems and find the solutions. The PBL syntax embedded in the performance assessment rubric is also integrated with the critical thinking ability component. The performance assessment rubric used allows students to engage with critical thinking skills. PBL helps students develop critical thinking skills. Students are asked to develop critical thinking skills through group work with the results of practical performance assessment activities and products showing good categories. Where the practice percentage shows the lowest value with a percentage of 50% in the deduction dimension, with activities to determine conclusions and consider the results of the analysis with problems in each group to answer questions. he percentage of results shows the lowest value of 50% in the deduction dimension, with activities to determine conclusions and consider the results of problem analysis in each group to answer questions. The percentage of practice shows the highest score of 75% in the inference dimension; familiarization and interpretation with information analysis activities; exploration of information and conditions; identification of information obtained; presentation of solutions and preventive efforts as well as the results of group work

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