Building Students' Critical Thinking Skill through Problem-Based Learning Model

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Abstract-Reality showed that one of the common problems being faced in the world of education at various levels of school is the low level of students' critical thinking skill. The low level of students' critical thinking skill is caused by the learning model applied in learning by the teacher being unable to stimulate students to improve their critical thinking skill. The purpose of this research was to build students' critical thinking skill through the implementation of a problem-based learning model. The method used in this research was a library research method or approach. The type of research used in this research was library research. Data collection in this research was carried out using documentation and literature study techniques, namely reviewing several journals, books, theses, scientific works sourced from the internet as a source of information that can be studied according to the theme of this research. The data obtained were then analyzed in depth to then be presented descriptively. The results of this research indicated that the implementation of problem-based learning model can build students' critical thinking skill. Because this learning model provides or bases problems as a starting point for students to investigate, inquire and solve. In this learning, students are gradually able to build concepts and principles from a material with their own abilities that integrate skills and knowledge that have been previously understood. Through this learning model students are active and have the opportunity to find and apply their own ideas in solving problems, thereby supporting students to develop their critical thinking skill.

Keywords: building, skill, critical thinking, problem-based learning model

I. INTRODUCTION

One of the challenges of education today is building 21st century skills, including information and communication technology literacy skill, critical thinking skill, problem solving skill, effective communication skill. and collaboration skills. Those skills according to the United Nations (UN) are a characteristic of today's global era society, namely knowledge-based society (Suarsana & Mahayukti, 2013).

Of these various skills, the ability to think critically has become a matter of great concern in the development of students' thinking. This can happen because students' critical thinking skill is the most important thing in today's 21st century. In the 21st century students are required to be able to keep up with the times that are appropriate and good for themselves, one way to keep up with the times is by developing students' thinking skill well. Basically every human being has the potential to be able to think critically. However, not all humans are able

to use critical thinking skill in various situations so that a person's ability to solve problems is often difficult to obtain (Lieung, 2019).

Reality showed that one of the common problems that are being faced in the world of education at various levels of school is the low level of students' critical thinking skill (Sudarsana, Armaeni, Sudrajat, Abdullah, Satria, Saddhono, Samsiarni, Setyawasih, Meldra & Ekalestari, 2019). However, what is often encountered today is that the critical thinking skill of Indonesian students are still relatively low. It is known that based on the results of the Program for International Student Assessment (PISA) 2012, Indonesia's literacy score is 382 with a rank of 64 out of 65 countries. The questions used consist of 6 levels (level 1 is the lowest and level 6 is the highest). Students in Indonesia are only able to answer at level 1 and level 2. In the PISA data that has been presented this shows that students' ability to answer questions that refer to critical thinking skill is still very low (Satria & Sopandi, 2019).

Of course, these problems spread in everyday life. The fact is that so far the ability of students to be able to solve problems has not been noticed by every teacher (Satria, 2019). As a result, when students face a problem, even though the problem is considered trivial, many students cannot solve it properly. Not a few students end up taking shortcuts, for example by drinking alcohol (getting drunk), taking illegal drugs, or even committing suicide just because they are unable to solve problems.

The low level of students' critical thinking skill is caused by the learning process that is carried out daily which is considered less effective in developing the interests, talents and potential that exist within students. Not to mention, the learning model that is applied in learning by the teacher is not able to stimulate students to improve their critical thinking skill (Behar-Horenstein & Niu, 2011).

Based on the problems previously described, students' critical thinking skill can be trained with learning that requires students to explore, inquire, discover and solve problems, so that one learning model that can be assumed to be able to improve students' critical thinking skill is the problem-based learning model.

II. METHODS

The method used in this research was a literature research method or approach. The literature study used in this research was related to collecting literature data, reading, and writing related to problem-based learning model and students' critical thinking skill. The type of research used in this research was library research, which in collecting research data collects data or scientific papers, which have the same purpose as the object of research or by collecting data that is literature. The literature used in this research aims to unravel the problem of conflict due to pluralism based on research that is relevant to what is being studied.

So that before conducting a review and analysis of library materials, researchers must know in advance about the sources or scientific information to be obtained. Furthermore, it is used as a series of data development and assessment, from mature and in-depth secondary data sources in order to obtain appropriate results (Satria & Sopandi, 2019). Data collection in this research was carried out using documentation techniques and literature studies, namely reviewing several journals, books, theses, scientific works sourced from the internet as a source of information that can be studied according to the theme of this research. The data obtained were then analyzed in depth to be presented descriptively.

III. RESULT AND DISCUSSION
A. Critical Thinking Skill

Thinking is an activity that involves the process of manipulating and modifying information in memory. In the process when thinking, we think to form or build a whole concept, wise consideration, critical thinking, making decisions, thinking creatively and being able to solve problems (Miri, David, & Uri, 2007).

In simple terms, critical thinking

means making judgments that are acceptable and reasonable. Critical thinking as a strategy uses criteria or standards to assess the quality of something, from the easiest activities such as activities that are usually carried out daily to draw up conclusions from a piece of writing that someone uses to evaluate the validity of something (statements, ideas, arguments, research, and others).

Critical thinking can also be said as self-regulation to decide (judging) something in which results in interpretation, analysis, evaluation, and inference, as well as exposure using valid evidence, concepts, methodologies, criteria, or contextual considerations that form the basis for making decisions (Suharyat, Santosa, & Satria, 2023)

Critical thinking is very important and fundamental. Critical thinking is one of the Higher Order of Thinking Skill that must be instilled in students' way of thinking (Siahaan & Meilani, 2019). Critical thinking is a great strength and a source of energy in one's social and personal life.

Critical thinking is a process that formulates orderly reasons actively and skillfully starting from drafting, applying, analyzing, integrating (synthesis), or evaluating information collected through a process of observation, experience, reflection, reasoning or communication as a basis for determine action.

Critical thinking is a rational and reflective way of thinking in making decisions about what to believe or do. Rational means having beliefs and views accompanied by standard, actual, sufficient and relevant evidence; Reflective means having to consider actively, carefully and diligently all alternative solutions to problems before making a decision (Ramli, 2017).

Critical thinking is fundamental for students to have, because it enables and facilitates students to be able to solve social, scientific and practical problems effectively. Especially in an era like today, the existence of various knowledge and information cannot be said to be sufficient to be able to solve problems (Barbara, 2005). Because to be able to work

effectively in the world of work and in everyday life students must be able to independently solve problems to be able to make the right decisions.

Critical thinking skill is students' ability to analyze arguments, make conclusions using reasoning, assess or evaluate, and make decisions or solve problems (Rosyida, Zubaidah, & Mahanal, 2016)

B. Problem-Based Learning Model

The problem-based learning model is a learning model that uses real world problems or contextually. The problem is used as a context/base for students to learn critical thinking and problem-solving skill, as well as to acquire essential knowledge and concepts from the subject matter.

When students are faced with this problem, they will realize that in order to solve it, they must be able to use their critical thinking skill, systematic approach and integrate information from various disciplines (Sutrisna & Juliari, 2019).

The objectives of problem-based learning according to Hmelo-Silver (2004) are (1) to build broad and flexible knowledge bases; (2) to develop effective problem solving skill; (3) to develop self-directed and lifelong learning skill, (4) to become effective collaborators; and (5) to become intrinsic motivation for students to learn. Likewise, Tan (2003) states that the purpose of problem-based learning is to make students proficient in process skill and problem solving skill and to make students for lifelong learning. Lifelong learning is independent learning skill, free to seek information, collaborative learning, and reflective thinking (Palennari, 2018).

Theoretically the problem-based learning model refers to Project Based Learning, Experience Based Education, Authentic Learning, Meaningful Learning (Anchored Instruction) (Satria & Widodo, 2020).

The following are the main characteristics of the problem-based learning model.
1. Driving questions or problems. Teaching organization begins with a question or problem. These questions or

problems are socially and personally meaningful to students.

2. Focusing on interdisciplinary links (interdisciplinary focus). Students solve the problems they face by reviewing them based on the links between fields of knowledge. The more general the problem, the higher the relationship between disciplines.

3. Authentic investigation. Conduct investigations to find real solutions to real problems. In the event that it is very necessary to analyze the problem, develop hypotheses, track information and sources, do "experiments", interpret, and conclude.

4. Produce works and exhibit them (Production of artifacts and exhibits). Make "real" works in various forms such as reports, physical models, videos, programs, and so on from the results of solving problems. Then exhibit or present the work.

5. Collaboration. In principle, teaching with the problem-based learning model is a cooperative learning model. The collaboration referred to in this case is cooperation to develop social skills and thinking skills through inquiry, dialogue, discussion, and so on.

Conceptually, the Problem Based Learning model has five characteristics that distinguish it from other learning models, namely:

1. Learning is student centered, namely the learning process focuses more on students as learners. Constructivism theory in the Problem Based Learning model requires students to be able to develop their own knowledge through several activities that they will do.

2. Authentic problems from the organizing focus for learning, the problems presented to students are authentic problems so that students are easily able to understand these problems and can apply them in their professional life.

3. New information is acquired through self-directed learning. In the process of solving problems, it is possible that students do not know and understand all the prerequisite knowledge so that students try to find their own sources,

either from books or other information.

4. Learning occurs in small groups, so that scientific interaction and exchange of ideas occurs in an effort to develop knowledge collaboratively, teaching and learning process is carried out in small groups. The groups that are created demand a clear division of tasks and the implementation of clear goals.

5. Teachers act as facilitators In the implementation of teaching and learning process, the teacher only acts as a facilitator. Even so, the teacher must always monitor the development of student activities and encourage them to achieve the targets to be achieved.

C. Building Critical Thinking Skill with the Implementation of Problem-Based Learning Model

To be able to build critical thinking skill, teachers can provide learning experiences by designing learning processes. The teacher designs learning by providing problems that involve students' thinking skill and involves analyzing processes based on actual problems. One of the learning models that can be applied is Problem Based Learning (PBL) (Lestari, Ansori, & Karyadi, 2017).

Problem Based Learning (PBL) is a learning model that can help students to improve the skills needed in the current era of globalization. It is an innovation in learning because students' thinking skill is really optimized through a systematic process of group or team work, so that students can empower, hone, test, and develop their thinking skill on an ongoing basis. It is a learning approach that is used to stimulate students' higher-level thinking in situations oriented to real-world problems as a context for students to learn about critical thinking and problem solving skills, as well as to acquire essential knowledge and concepts from subject matter. Problem-based learning is used to stimulate higher-order thinking in problem-oriented situations, including learning.
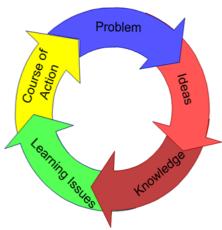
This is because in problem-based learning to gain essential knowledge and concepts from subject matter, students are

given a problem which is a problem in life.

An important aspect of problem-based learning strategies is that learning starts with problems, and these problems will determine the direction of learning in groups. By making problems the basis of learning, students are encouraged to find the information needed to solve problems.

This learning first provides problems for students to investigate and solve problems. Students build concepts and principles from a material with their own abilities that integrate skill and knowledge that have been previously understood (Sutrisna & Artini, 2020).

A person's critical thinking skill will grow and develop over time when the individual faces a problem that is relatively new or a previous problem that has never been solved, this can happen because when a person obtains new information and the information is stored in his memory so that the information is one with the other. Others are interconnected or rearrange each other for a purpose or find the desired answer. So, it is necessary to think critically about a problem faced so that the information obtained is truly valid (Munawwarah, Laili, & Tohir, 2020).

In addition, the problem-based learning model requires students to be active in the learning process and have the opportunity to find and apply their own ideas in solving problems so as to support students to develop their critical thinking skill. Meanwhile, to determine whether or not the knowledge gained or how to solve the problem is done, students must re-check the steps so that their critical thinking skill is trained

IV. CONCLUSION

Implementation of problem-based learning model can build students' critical thinking skill. Because this learning model provides or bases problems as a starting point for students to investigate, inquiry and solve. In this learning, students are gradually able to build concepts and principles from a material with their own abilities that integrate skills and knowledge that have been previously understood. Through this learning model students are active and have the opportunity to find and apply their own ideas in solving problems so that it supports students to develop their critical thinking skill.

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