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Syntax error analysis of problem based learning model in science learning

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ABSTRACT (10 PT)

This study aims to find out the syntax errors of the Problem Based Learning learning model in science learning conducted by teachers. This research is important to carry out because the PBL model is a model that can bridge students to real problems around them so that every learning step is important to be done properly and systematically. This study uses a descriptive qualitative approach. Data were collected through observations, interviews, and literature studies. The data was analyzed using Miles and Huberman. The results of the study show that the implementation of the Problem Based Learning (PBL) model by science teachers has not fully followed the correct syntax, especially in problem orientation that is not done well. However, teachers have successfully organized students, guided group discussions, and evaluated the problem-solving process, although there is still room for improvement in presenting real problems. Therefore, it is recommended to provide training to teachers, ensure the use of real problems, and conduct regular monitoring and evaluation. Collaboration between teachers is also needed to share experiences and the best strategies in implementing PBL.

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1. INTRODUCTION

Learning is an important key in the educational process. Effective learning requires many supporting components including learning models. The learning model is a certain pattern or learning steps that are applied and implemented so that the goals or competencies of the expected learning outcomes will be quickly achieved more effectively and efficiently (Inayah A.M et al., 2023). One of the learning models that is often used by teachers in the classroom, especially at the elementary school level, is the Problem based Learning (PBL) learning model. This is in accordance with Rifai's opinion, PBL is a learning model that is commonly used in elementary schools and can have a positive impact on student activities (Rifai et al., 2023). The problem-based learning model is a learning model that presents authentic and meaningful problems so that it makes it easier for them to conduct research and inquiry (Tabroni et al., 2022). Furthermore, according to Darwati et al., the PBL model is a learning model that uses real-world problems as the first step for students to learn in gaining essential knowledge and concepts from each learning material that students have had before, so that new knowledge is formed (Darwati & Purana, 2021).

In the learning process using the PBL model, problems are often encountered. These problems include poor time management by teachers, lack of understanding, student motivation and inadequate facilities (Syahlan et al., 2023). Furthermore, another opinion explains that the problem of implementing the PBL model can be sourced from the lack of active involvement of students (SUINDHIA, 2023). Therefore, the researcher stated that this research is important to be carried out because the PBL model is a model that can bridge students to real problems around them so that every learning step is important to be done properly and systematically. Similar research has been researched by Rokim who examines the problems of applying the PBL model to the faith map (Rokim, 2024). Based on the relevant research that has been carried out, the latest of this research is carried out in elementary schools and specifically carried out in science learning.

The PBL model is a learning model that starts with real problems that are in accordance with the subject matter so that it can train students to think critically in solving a problem, and can foster students' skills in solving a problem (Mazrur et al., 2023). The learning steps of this model include orienting students to problems, organizing students to learn, guiding individual and group investigations, developing and

presenting works, and analyzing and evaluating the problem-solving process (SUINDHIA, 2023). Another opinion says that the PBL learning steps consist of student orientation to problems, organizing students to learn, guiding individual/group experiences, developing and presenting works, analyzing and evaluating the problem-solving process (Pramudya et al., 2019). The PBL learning model can be implemented well if teachers are able to apply the PBL model according to their learning steps. The purpose of this study is to find out the syntax errors of the Problem Based Learning learning model in this learning.

2. METHOD

This study uses a descriptive qualitative approach. Qualitative research is a type of research used to study the natural condition of objects based on the philosophy of postpositivism where the researcher is the main instrument, and data collection and analysis techniques use a qualitative/inductive approach that emphasizes meaning (Sugiyono, 2021). The source of the data came from a grade V teacher at one of the State Elementary Schools in the Surakarta City area. The data collection techniques used in the research are using observation, interviews, and literature studies. Data analysis uses the Miles and Huberman model. The research process goes through the stages of preparation, data collection, data analysis and preparation of research reports.

3. RESULTS AND DISCUSSION

Based on the results of the observations made, it shows that in science learning, teachers who state to use the PBL (Problem Based Learning) learning model have in fact not fully followed all the learning steps or syntax of the model. In this learning, the PBL learning steps that should start with problem orientation to students have not been implemented properly. Teachers should be able to present problems that exist in the real world so that students can feel that these problems do exist and make students interested in these problems. During the observation, the teacher only presents problems in the form of triggering questions so that students do not construct the problem as curiosity. At this stage, a weak problem orientation can reduce students' understanding, reduce learning motivation, and affect overall learning achievement.

In the step of organizing students to study here, the teacher has well organized students to learn by preparing students to open books, listen to materials, and condition students in the classroom to be ready to learn. This is a good thing. The teacher's ability to condition the classroom can have a good effect on the achievement of learning goals. This is in accordance with Husain's opinion that the ability of teachers to condition the classroom has a positive impact on learning objectives (Husain et al., 2022). The ability of teachers to organize students to learn is the second step in the PBL learning model. In this process, the teacher plays an important role in preparing students to receive knowledge and construct their knowledge (Pasaribu et al., 2023). At this stage, teachers also form students in small groups to discuss and find answers to problems.

The stage of guiding individuals/groups based on the results of teacher observation can guide students well. This is shown by teachers who conduct group visits and provide guidance to students who are confused in solving the flow of problems. At this stage, group guidance activities must be well guided by teachers who aim to provide information, encourage discussion about educational issues, introduce responsibility, teamwork, and democratic behavior, and improve interpersonal relationships among students (Hawkins et al., 2016). After students discuss with the team, the next step in the PBL learning model is that students can develop and present their work. In the observation results, the teacher asked students to present the results of the discussion and make justifications if there were inappropriate student answers. By presenting the results of the discussion, students get a comprehensive and meaningful learning experience. This process can also develop students' creativity and innovation that allows them to think creatively and find solutions to problems. With the PBL learning model, students can be facilitated to actively participate in the learning process (Manresa et al., 2020) (Puspita, Saputra, & Arrosyad, 2025). Next, the teacher analyzes and evaluates the problem-solving process. If there is an error in the results of the student discussion, the teacher must provide a justification.

4. CONCLUSION (10 PT)

In the results of the study, it was found that there were still syntax errors in the Problem Based Learning (PBL) learning model. Although the teacher stated that he used a learning model. Problem Based Learning (PBL) in science learning, the implementation has not fully followed the entire syntax of the model. The first step of PBL, namely problem orientation to students, has not been implemented properly. Teachers should present real problems to keep students interested, but only provide triggering questions that do not encourage students to construct curiosity. At the stage of organizing students to learn, teachers have

successfully prepared students well, conditioned the class, and formed groups for discussion. Teachers have also guided students well through group visits, providing guidance to solve problems, and supporting teamwork and interpersonal relationships. Next, students develop and present the results of their discussion, with the teacher providing justification for inappropriate answers. This process allows students to have a comprehensive learning experience, develop creativity, and actively participate in learning. Finally, teachers analyze and evaluate the problem-solving process, ensuring student errors are corrected. The implementation of the Problem Based Learning (PBL) model by science teachers has not fully met the expected standards, especially in the aspect of problem orientation that is not strong. Schools have to provide training to teachers, ensure the use of real problems, and conduct regular monitoring and evaluation. In addition, by increasing collaboration between teachers, it is also necessary to share experiences and the best strategies in implementing PBL.

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