



Student Learning Activity in the Problem Based Learning (PBL) Model for Science Subjects

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ABSTRACT

The fifth-grade students at SDN 3 Katobengke, who engaged well in learning activities, inspired this research. The fifth-grade students were very enthusiastic about learning. When the teacher asked a short question, the students quickly raised their hands to answer. This was evident in their reactions. The next research objective was to determine whether the use of the Problem-Based Learning learning style increases student engagement in science subjects. Furthermore, the researcher was interested in determining the variables that influence the learning activities of fifth-grade students at SDN 3 Katobengke. This research was descriptive qualitative. The following approaches were used to collect data for this study: observation, questionnaires, interviews, and documentation. According to research findings obtained from teacher interviews, children became more engaged when using the Problem-Based Learning pedagogy.

Keywords: Student Learning Activeness, Problem-Based Learning, Science

1. Introduction

Education plays a very important role in creating a dynamic, conducive learning environment and supporting the optimal development of children's potential. (Retno et al., 2023; Suardi, Megawati, & Kanji, 2018) Through a structured and systematic educational process, children not only acquire academic knowledge and skills, but also learn to develop positive characters that are the main provisions in social and moral life. (Rahmi, Hasanah, & Anti, 2020) Schools as formal institutions play a major role in shaping the personality of students through the habituation of noble values such as honesty, responsibility, cooperation, empathy, and respect for others. The values of good, noble, appropriate, and beautiful life must be consistently integrated into every subject, extracurricular activities, and daily interactions in the school environment. (mu'awanah, 2020)

Therefore, ideal education not only aims to produce individuals who are intellectually intelligent, but also those who have moral integrity and noble character. In other words, the depiction and instillation of these values constitute the essence and primary goal of education itself, namely to shape whole individuals who excel not only in thought but also in action, wisely, and capable of making a positive contribution to society and the nation. (Laghung, 2023) Education also aims to provide direction for all educational endeavors. Therefore, teachers have an obligation to arouse students' interest and help them develop (Constitution No. 20 of 2003). Education is also crucial in relation to development, and therefore the government continually strives to improve the quality of education from elementary to higher education. Elementary school, or hereinafter referred to as SD, is a school level that aims to provide basic skills in reading, writing, arithmetic, and other fundamental skills to enhance student potential and achievement. (Sujatmiko, Arifin, & Sunandar, 2019)

Natural Science (IPA) is one of the subjects taught in elementary schools with the aim of developing students who actively explore their potential. In Samatowa (2010:3), (Agustina, Fakhruddin, & Istan, 2020; Sobirin, Ihsan, & Wahab, 2023), Fowler states that science is the study of natural phenomena and systematic objects arranged in an orderly, generally applicable manner, in the form of a collection of observations and experimental results. "Systematic" means knowledge organized in a system, not standing alone, related to other knowledge, and explaining other knowledge to form a unified whole. The term "generally applicable" indicates knowledge that is not simply valid or derived from one or more individuals using the same experimental methods to obtain consistent or identical results.

Based on my observations and interviews with the children, the fifth-grade students of SDN 3 Katobengke are active learners, especially in science subjects. (Fikri, 2023; Ridlo, Istighfarini, & Supeno, 2022) During the question and answer period or while completing individual worksheets, students may respond to questions from the teacher. At that time, the class teacher, Anastasya Sariningsih, S.Pd., showed a video and utilized PowerPoint learning materials to explain the Water Life Cycle. In addition, the instructor asked the class to sing a song as a perception exercise. The next instruction was for students to stand and sing the song in a circle. This exercise was done so that children would not get bored with their education and to increase students' interest in the things learned throughout the day. Students had the opportunity to voice any complaints they might have experienced throughout the session when the teacher concluded the learning activity. In addition to teaching students to be honest, this practice may help children become more open-minded. During the teaching and learning process, the teacher has used learning models including PBL (Problem Based Learning) and STAD (Student Team Achievement Division) in addition to learning media. (Sarudin, Hashim, & Yunus, 2019)

However, because this learning strategy is only applied when the content being taught is deemed appropriate or reasonable, teachers do not implement it directly during the observation process. The lack of application of this strategy during observations has raised interest among educational scholars and researchers, especially in examining the extent to which student engagement can be increased if fifth-grade teachers truly utilize the Problem Based Learning (PBL) learning method in teaching Natural Sciences (Science). PBL as a constructivist approach is believed to be able to encourage active participation, increase curiosity, and build students' in-depth conceptual understanding through contextual problem solving. Therefore, research on the application of PBL in the context of science learning at the elementary school level is important to answer questions about the effectiveness of this strategy in creating a more meaningful and participatory learning experience for students. Problem-based learning is another name for problem-based learning according to Erwin Widiaworo (2017:170). Learning that provides challenges to students before starting is called problem-based learning. The purpose of this study was to describe how fifth-grade students at SDN 3 Katobengke implemented the Problem-Based Learning (PBL) learning model in science classes and to identify factors influencing their learning activities. (Widiastuti et al., 2020)

2. Methods

This research uses a qualitative approach with the aim of in-depth understanding of phenomena occurring in the field through the perspective of participants. This method was chosen because it is appropriate for exploring the meaning, experiences, and views of research subjects regarding a particular

educational event or process. Data collection techniques were carried out through participant observation, in-depth interviews, and documentation. According to Sugiyono (2016:220), observation is a method or approach to collecting data by observing ongoing activities. According to Creswell (2010:267), observation is a process in which researchers personally visit the research location to observe people's actions and behaviors. Observations are conducted directly at the research location to capture interactions, behaviors, and social dynamics that occur naturally. Semi-structured interviews were conducted with relevant informants, such as teachers, students, and principals, to obtain rich and contextual data. The common method of data collection for qualitative and quantitative descriptive research is interviews. Face-to-face individual meetings were used to conduct oral interviews (Sukmadinata, 2016:216). Teachers, students, and parents were the objects to be interviewed for this research as informants or sources of data to be studied. Documentation includes analysis of learning documents, syllabi, and activity records that support data validity. Data analysis was conducted thematically through data reduction, data presentation, and conclusion drawing. To ensure data validity, source and method triangulation techniques were used. Researchers also implemented intensive direct field involvement to gain a holistic understanding of the research context. With this approach, the research is expected to produce in-depth, relevant findings that will make a meaningful contribution to the development of educational theory and practice.

3. Findings and Discussions

This study examines elements related to the title, which are examined through various sources of observation, interviews, and student questionnaire responses. Student learning activities can be identified through this method. The following description and supporting information about active student learning at SDN 3 Katobengke are presented. These findings are based on observations and research conducted by the researcher at the school.

3.1 Activity

Students' eagerness to raise their hands and hope to be selected by the teacher to answer questions demonstrates a high level of engagement in the learning process. This enthusiasm reflects a sense of challenge and a desire to actively demonstrate their understanding. In the initial stages of the lesson, the teacher deliberately did not encourage students to open their books, ensuring that all students' attention remained focused on the oral explanation. This strategy effectively created an interactive and attentive classroom atmosphere. Subsequently, the teacher used PowerPoint presentations containing questions designed to stimulate students' critical thinking skills. These questions not only tested basic understanding but also encouraged students to analyze, interpret, and express opinions based on the knowledge they had acquired. Thus, learning was not merely one-way but became dialogic and intellectually challenging. This approach aligns with the principles of active learning, where students are not merely recipients of information but also actively involved in the thinking and problem-solving process. This situation created a lively classroom dynamic conducive to optimal student cognitive development.

The results of the questionnaire administered to students indicated that the majority of students demonstrated active participation in the learning process. A total of 75% of students were recorded as actively responding to questions posed by the teacher, indicating that they were directly engaged and showed interest in

the material being presented. Furthermore, social interactions between students also appeared positive, with 95% of students reporting feeling satisfied when discussing or talking with their group members. This indicates that collaborative learning provides a space for students to exchange ideas and build shared understanding. Student enjoyment of the teacher's explanations was also an important indicator; almost all students expressed satisfaction with the teacher's explanations, indicating that the teacher was able to deliver the material in an engaging and easy-to-understand manner. This also indicates that students were actively listening during the lesson. However, the data also showed that only 60% of students actively asked questions, suggesting that some students were still passive or lacked the confidence to ask questions. Therefore, further strategies are needed to encourage active involvement of all students, particularly in terms of asking questions and exploring information independently. (Arfiani, 2021)

Based on research findings, it can be concluded that the implementation of interactive and collaboration-based learning methods, such as group discussions and the use of presentation media, can increase active student participation in the learning process. The involvement of 75% of students in answering teacher questions indicates that most students feel challenged and cognitively engaged in learning. This reflects a classroom environment that supports open dialogue between teachers and students. Furthermore, the 95% satisfaction rate of students during discussions with their group mates indicates that collaborative learning provides space for the development of social skills, cooperation, and communication among students, which are crucial in 21st-century learning. (Albalooshi, Najam, Alseddqi, & Al-Mofleh, 2023)

The fact that all students expressed enjoyment with the teacher's explanations reinforces the importance of the teacher's role as a learning facilitator capable of creating a pleasant and motivating atmosphere for students. However, only 60% of students actively asked questions, indicating limitations in encouraging students to think critically and ask questions. This could be due to internal factors such as shyness, lack of confidence, or a learning culture that is still teacher-centered. Therefore, it is necessary to develop more inclusive and supportive pedagogical strategies, such as giving rewards to students who actively ask questions or creating non-pressuring question and answer sessions, in order to foster students' courage and curiosity as a whole. (Khotimah & Mariana, 2022)

3.2 Study

Students participated in this study in four groups, each consisting of five students. Students within a group inevitably had to share their perspectives with each other to solve challenges, which led to conversations. Students were free to consult books for solutions when working on this topic. Each student could gain knowledge indirectly from information sources, particularly books. They would then deliberate and try to determine the appropriate response. Next, delegates from each group were asked to present the results of their deliberations. Students would then reconsider whether their answers were accurate. Throughout the learning process, the instructor assisted students in finding solutions. The teacher and students would not discuss the correct answers until afterward. Each response was corrected by the students.

Students gained problem-solving skills through discussion and the courage to present solutions in front of the class. Learning can take place both at home and at school. Students who are aware of their surroundings and eager to learn typically achieve excellent learning outcomes. Students will always seek out what they don't know. Learning at home requires parental support. Students who have difficulty

learning at home can ask their parents for help. Learning can also be done at a tutoring center. The results of this study indicate that collaborative learning in small groups can encourage active participation and the development of students' critical thinking skills.

This finding aligns with research by Johnson & Johnson (1994), which states that cooperative learning can improve learning outcomes through positive social interactions and interdependence among group members. In the context of this study, students actively shared perspectives, discussed solutions, and presented their discussions to the class, all part of an active, problem-based learning strategy. This process reflects the principles of constructivist learning, as explained by Vygotsky (1978), who argued that social interaction is key to cognitive development. Furthermore, the opportunity for students to seek answers through books demonstrates the application of literacy-based learning strategies, which, according to Guthrie et al. (2004), can increase learning motivation and the ability to understand information. The teacher's role as a facilitator who guides without directly providing answers reflects a scaffolding approach, where the teacher supports students' thinking process until they become independent in solving problems. Support for learning outside the classroom, both from parents and guidance institutions, also strengthens learning outcomes, as revealed by Epstein (2001), that parental involvement has a positive influence on students' academic success.

3.3 Problem Based Learning (PBL)

Observations conducted at SDN 3 Katobengke, a fifth-grade class, showed that the problem-based learning methodology was implemented very successfully. In an interview, Mrs. Rini, a fifth-grade teacher, stated that students became more engaged when the problem-based learning methodology was used. Fifth-grade students were already engaged. However, Mrs. Rini observed a change after the implementation of the problem-based learning methodology. This variation was evident in the way students approached problems, consulted with the teacher, and so on. In fact, the instructor at the time supported the learning process with learning materials, particularly LCDs. To implement this paradigm, teacher involvement is crucial. Teachers must be able to control group dynamics during discussions, maintain students' active participation in the learning process, and stimulate critical thinking in them. Furthermore, problem-based learning is student-centered, with the teacher acting as a guide, motivator, and facilitator. Students' problems are used to hone their problem-solving skills. After the discussion results are announced, these problems will be resolved. As the researcher observed, the instructor helped students overcome the challenges displayed on the LCD screen. At this point, the problem to be solved was, "Explain the various bone disorders that you know and how many types of bone disorders there are." Each group will provide a different response. The teacher will then collect all the group responses and ask everyone to complete the task at once.

3.4 Science Subjects

It is undeniable that every student is unique. Some people work hard, maintain discipline, are active, and so on. In subjects too. There is no doubt that every student has a unique perspective on subjects they find easy or challenging. Some people like mathematics because they feel happy doing calculations. Some people enjoy studying Indonesian because of the many stories and other materials available. Based on interviews with fifth-grade students of SDN 3 Katobengke, many of them expressed their preference for science subjects. The reasons vary, some people like science because of the way the professor teaches, while others like

science because the subject matter relates to human organs and nature. In addition, some people enjoy it because it requires a lot of practice. On August 22, 2019, students were practicing making basic models of plasticine anomalies in bones when researchers observed them. As they were making the models, they seemed enthusiastic because practice was more than just playing to learn. Together, they formed a group to make the models. Students made the models under the guidance and direction of the teacher. One student didn't bring any plasticine, but his group members kindly brought it, ensuring a smooth learning process. Each student within the group was given a separate task. Some created heads, arms, and bodies. Students were then asked to explain the simple models they had built. The other students' enthusiasm was unaffected by the shy student.

4. Conclusion

Based on the research findings and discussion, it can be concluded that students' active learning is influenced by various interrelated factors. First, the teacher's role is crucial, particularly in terms of creativity and motivation in developing engaging Lesson Plans (RPPs), so that students do not feel bored and remain engaged in learning activities. Second, students' awareness and willingness to understand the value of the learning process will encourage them to actively improve their knowledge gaps. Third, students' internal motivation plays a crucial role; students who lack motivation tend to be passive and ignore the information presented. Fourth, parental support is also an important factor. In addition to providing assistance when children experience difficulties, parents need to create a conducive learning environment at home, such as not interrupting children's study time with irrelevant activities. In the context of the implementation of Problem Based Learning (PBL) in grade V of SDN 3 Katobengke in science subjects, it was found that students were more active in discussions, expressing opinions, and asking questions when experiencing difficulties. Teachers reported increased student enthusiasm and participation, reflecting the effectiveness of the PBL approach in creating active, participatory, and meaningful learning.

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