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Optimizing Problem-Solving Skills in First Grade: A Project-Based Learning Model Enhanced by Lesson Study at Sekolah Dasar Unggulan Hamzanwadi

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Abstract: This research examines the implementation of School-Based Lesson Study at Sekolah Dasar Unggulan Hamzanwadi with a focus on improving the quality of teacher learning. Field data indicates that some students have not reached the target for learning quality, especially in group problem-solving skills. The research is focused on improvement through planning, implementation, and evaluation cycles (Plan-Do-See). Cycle I focuses on visual arts learning about shapes, while Cycle II emphasizes group problem-solving through practical baking activities. Lesson Study at Sekolah Dasar Unggulan Hamzanwadi has advantages in encouraging student interaction and fostering creativity but needs to address drawbacks such as a relatively long implementation time and student resistance to group learning.

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Introduction

Primary school is the first phase in the formal education system that requires 12 years of study. This basic education is an environment where students develop their mindset to respond to real situations around them (Bali et al., 2022; Hussein, 2021; Jaelani & Asvio, 2019; MacLeod & van der Veen, 2020; Sudrajat & Hariati, 2021). The learning process in the context of formal education creates positive changes, allowing students to find various solutions to the challenges faced. Efforts to educate children to become better individuals need to be realised through cooperation between families, schools, communities and governments, especially in the realm of education (Ambarwati & Kabib, 2021; Fahrurrozi et al., 2022; Murcahyanto, 2019; Rienties et al., 2020).

In accordance with the Education System Law No.20 of 2033, education is defined as a conscious and planned effort to create an atmosphere of learning and learning, so that students actively develop their potential (Murcahyanto, 2023; Rahman et al., 2021; Triwiyanto, 2021; Widyastuti et al., 2020). Education can also be interpreted as an effort to change individual or social ethics and behaviour in order to achieve independence, through education, learning, guidance and coaching activities. Broadly speaking, education can be defined as life, including all knowledge and learning that occurs throughout life, in all places

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and situations that have a positive influence on the growth of every living being (Harun, 2013; Jalil, 2016; Miarso, 2014; Suryana, 2020).

In the field reality observed by the author, students' ability to solve small problems looks adequate. However, related to the learning process, some students showed a low level of problem solving. Observations on 8 January 2024 showed that teachers still need to provide guidance to some students in completing tasks or dealing with problems. When students are in learning situations or listening to lectures, they tend to just understand the material while taking notes.

Although the teacher provides exercises that allow students to solve problems or present problems, there are still some students who have difficulty in solving these problems. During the learning process, students show a very active attitude but tend to find it difficult to focus and stay still, both in asking questions to the teacher and in responding to and seeking answers from their peers.

In overcoming these problems, teachers aim to create and select the right strategy, method, or model to engage students in group discussions, think critically, and relate learning materials to everyday life (Munadlir, 2016; Triwiyanto, 2021; Wati & Trihantoyo, 2020). One of the proposed models is Problem Based Learning (PBL), which emphasises a focus on solving real problems. The PBL model involves learners in group work, provides feedback, and encourages students to be more active in learning, so they can develop critical thinking skills and achieve better learning outcomes. This PBL model starts by presenting real-life problems, giving students the opportunity to conduct out-of-school investigations related to learning problems (Audrey et al., 2019; Nasri et al., 2021; Rudibyani, 2020; Simarmata, 2022).

The Problem Based Learning (PBL) model includes four learning principles, which consist of constructive, independent, collaborative, and contextual learning. The purpose of learning using the PBL model is to help students develop thinking, problem-solving, and intellectual skills. In addition, this learning aims to enable students to understand various adult roles through direct participation or simulation (Amin et al., 2020; Lobo, 2016; Simarmata, 2022).

To achieve the learning objectives, the steps of the PBL model need to be implemented well. These steps involve orienting students in the problem, organising students to learn, guiding investigations both individually and in groups, developing and presenting work, and analysing and evaluating the problem-solving process (Kristanti et al., 2018; Zulfa et al., 2022).

Through PBL, students are involved in groups and intensive discussions. In oral interaction, they ask, answer, criticise, correct, and clarify each other's mathematical concepts and arguments that arise in the discussion (Hamdani et al., 2022; Simarmata, 2022; Zulfa et al., 2022). This process develops students' ability to make, refine, and explore conjectures, thus strengthening their understanding of the mathematical concepts learnt or mathematical problems solved. Finally, students are expected to communicate their ideas, both orally and in writing, to solve the given problem.

Lesson study, in essence, is a significant effort to improve the quality and professionalism of lecturers in facilitating the learning process. It is considered an important part of the internal quality assurance aspect of lecturers' pedagogical competence and

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professionalism integrated with the implementation of ISO management (Haka et al., n.d.; Hamdani et al., 2022; Singerin et al., 2020).

Specifically, the objectives and targets of lesson study activities are related to improving the quality of the Teaching and Learning Process and character building, including helping students collaborate in improving problem solving, implementing collaborative learning as an effort to improve individual and group cooperation, building positive characters that support the implementation of the learning and teaching process, and minimising conflicts that often occur in group cooperation through collaborative learning.

Research Method

Lesson Study activities at Sekolah Dasar Unggulan Hamzanwadi were carried out for two days in January 2024 with two cycles of activities, namely Plan, Do, and See. The target of this activity was grade I students, involving fellow Hamzanwadi University Postgraduate Students. The Lesson Study focused on observing students' reactions to the planned learning. Conducted by six teachers with different tasks, this activity is collaborative and sustainable. Lesson Study aims to improve the learning process and see the extent of student problem solving.

In Lesson Study at Sekolah Dasar Unggulan Hamzanwadi, students' problem-solving skills are seen through in-group collaboration and mediation. In-group collaboration is characterised by member engagement, personal awareness and mutual support. Mediation involves joint problem solving, listening to instructions by collaborating, moving together, listening to opinions, and accepting opinions without blaming each other. These activities help train students to take responsibility and think critically about learning problems.

In Lesson Study, the learning model applied is Problem Based Learning (PBL). PBL encourages students to learn how to learn, work in groups, and find solutions to real-world problems. The use of mask images in PBL at Sekolah Dasar Unggulan Hamzanwadi encourages students to think creatively and identify shapes that represent parts of the mask.

Lesson Study implementation at Sekolah Dasar Unggulan Hamzanwadi took place from 7.20-9.05 for two cycles. The technician was responsible for recording the activities with a mobile phone, including the interactions of the students and the model teacher. The steps involved announcing the observer's presence to the students, carefully observing the students, reflecting with the modelling teacher and the observer after each cycle, and planning improvements for the next cycle.

The reflection process is documented on video and questionnaires for evaluation by the Lesson Study team. The evaluation results become the basis for improving the quality of learning and achieving the Lesson Study objectives. The Lesson Study report is systematically compiled in the form of writing and video, presented to the lecturers and fellow postgraduate students of Hamzanwadi University Lombok Timur. The method of observation and data recording using observation sheets and video recordings is expected to provide a true understanding of the implementation of Lesson Study.

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Result and Discussion

Implementation of Lesson Study

The implementation of School-Based Lesson Study at Sekolah Dasar Unggulan Hamzanwadi to improve the quality of teacher learning. Field documentation data shows that some students have not achieved the learning quality targets, especially in problem-solving skills and cooperation in teaching and learning activities. Therefore, lesson study focuses on this improvement through planning, implementation, and monitoring activities. At the planning stage of the school-based lesson study, a team of six teachers and competent parties was formed.

The principal plays an important role in forming the team and deciding who will be the model teachers and observers. The steps of this activity are based on the Plan-Do-See concept, with planning as the first stage. In lesson study planning, problem identification was done through the selection of subject matter and learning strategies. The grade 1 teacher provided explanations that reinforced the problem identification activities, so that the team could design an improvement plan that suited the students' needs. The Plan-Do-See stage became the foundation for improving the quality of learning at Sekolah Dasar Unggulan Hamzanwadi through School-Based Lesson Study.

Implementation of Cycle I

First Plan Stage

Cycle I began on 8 January 2024, with the planning stage as the first step. The group of teachers who will act as model teachers design learning based on student codes. The planning of school-based lesson study at Sekolah Dasar Unggulan Hamzanwadi began with identifying student problems related to learning materials and strategies, especially on the material of shapes in fine arts. The problems included students' difficulties in providing examples of the shapes learnt on surrounding objects. The class teacher recognises the need for appropriate learning strategies so that students can be active and creative during teaching and learning activities. The identification of this problem becomes the basis for designing lessons that are expected to overcome student difficulties and improve the quality of learning.

Figure 1: Plan stage process

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First Do Stage

In the Do stage or the implementation of learning in Cycle I, on 16 January 2024, the model teacher and observers opened the art lesson with the theme of shapes. The model teacher, as the leader, started the discussion and suggested students to form small groups based on the observer's number. The purpose of group formation was to improve students' communication and cooperation. After gathering with their teams, each group worked together, supported each other, and competed. With the help of the observer, each group searched for the missing shapes on the mask completion task.

At the end of the activity, students were asked to collect their group work and paste it. The modelling teacher provided an opportunity for each group to convey the shapes they found, so that the observer could see the problem-solving process in the group. The Do stage in Cycle I ended with giving gifts and motivation by the modelling teacher and the observer.

Figure 2: First Do Stage Process

First See Stage

After the Do stage was completed on 18 January 2024, the See stage or learning evaluation was conducted. The Lesson Study implementation team discussed all the activities that had been carried out at the Do stage. Observations from the observers identified some shortcomings in the Do stage, among others: 1) Students are still not able to work in groups, so it is necessary to adjust the conditions during learning activities. 2) Students were not fully focused on the lesson and looked confused when given the task. Some students tended to talk to friends during learning. 3) Teamwork was not optimal; some students in the group were more focused on individual tasks, and only two groups were involved in the discussion. The Lesson Study team discussion showed that cycle II required changes and better lesson planning to achieve the set objectives.

Implementation of Cycle II

Cycle II of the Lesson Study focused more on group problem solving by students. This included ensuring students' active participation in the group, achieving each group's target learning activities, and improving the quality of teamwork, both within the group and with other students and observers. This cycle was implemented in one face-to-face meeting by one model teacher, who was responsible for teaching and assisting students during the learning

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process. In the second cycle, the learning was changed by utilising different learning media, and students shared groups with the supervisor. To motivate students and achieve the unachieved objectives, the learning media this time involved baking practice. It is hoped that this activity will capture students' interest and help them achieve the learning objectives. The baking process involves group work and independent activities, so students are thoroughly involved in the learning process.

Second Plan Stage

On 18 January 2024, the planning stage of the second cycle of Lesson Study began. To begin this stage, the cycle I lesson plan needed to be revised and redrafted with a focus on improving group problem-solving skills as well as listening and speaking skills. The cycle II lesson plan emphasised these improvements. In the design of cycle II, the presence of the model teacher and the lesson study team was planned a few minutes earlier to help adjust the class and learning setting. This aimed to create an impression of readiness to deliver the material on time when students arrived in the classroom. In addition, it also aimed to control student attendance. The addition of an observer to each group of students changes the group dynamics and encourages students to complete the task according to the set target. Planning also includes the provision of souvenirs as an incentive to increase students' enthusiasm for learning.

Second Do Stage

The activity began with motivating the students by the model teacher, followed by the implementation of learning by the model teacher based on the lesson plan that had been prepared. In the implementation or DO stage, the main activities involve the implementation of learning by the model teacher and observation by the Lesson Study team members. After the planning is done and the implementation time is agreed upon, the team members are expected to observe the learning conducted by the model teacher. Based on field observations, it can be seen that the learning activities in the lesson study are very interactive. Students actively asked questions to the teacher during material explanation and baking practice, showing their curiosity towards the next steps in the process of making shapes with cakes. The students also interacted more actively by asking questions to their neighbours. Observers reported that students were very active during the lesson study, and there were two open classes with the theme of "playing while learning" outside the classroom and the practice of making various shapes with cakes in the classroom.

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Figure 3: Second Do Stage Process

Second See Stage

After conducting the lesson observation, the model teacher and the observer gather to share the observation results. This stage begins with the impression of the model teacher who opened her class to be observed, as well as reflections on the learning that was carried out. Observers then convey the results of their observations in turn. The SEE stage is conducted in an open space with a circular seating arrangement, creating a relaxed discussion atmosphere. There are no specific rules regarding the SEE space, it can be done in a classroom, lab, or other room. The SEE stage is crucial for improving teachers' teaching skills, enabling evaluation of learning successes and shortcomings, and improvement planning. Civility of speech and collegiality in discussions are important to maintain harmonious relationships between teachers and students. The SEE stage also builds a conducive atmosphere, eases students' nervousness and increases enthusiasm for learning. Through discussion, teachers and students can motivate each other and build creativity in learning.

Lesson Study has several advantages and disadvantages to consider. Advantages include the ability to be applied to all classes, thus providing flexibility in its use. In addition, Lesson Study is able to encourage and assist teachers in overcoming problems that arise in the classroom, providing collaborative support for problem solving. The fun learning atmosphere is also an advantage, resulting in students becoming more active and engaged in the learning process. This more active student involvement can have a positive impact on their learning outcomes. Lesson Study also encourages collaboration between students to help each other and improve learning outcomes together. In addition, it encourages students to think critically and do their best, developing their thinking skills more deeply.

However, Lesson Study also has drawbacks that need to be considered. One of them is that it takes a relatively long time to implement. The planning, implementation, and evaluation processes are time-intensive, which can be an obstacle in the context of limited learning time. In addition, students tend to be reluctant to learn in groups, which can affect the effectiveness of collaborative learning. Another obstacle is the teacher's difficulty in determining the time to make an optimal learning plan. This can be a challenge in implementing Lesson Study effectively. Thus, while understanding the advantages of Lesson

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Study, it is necessary to overcome and manage the disadvantages so that the learning process can run well.

Conclusion

The implementation of School-Based Lesson Study at Sekolah Dasar Unggulan Hamzanwadi aims to improve the quality of teacher learning. From field documentation data, some students have not yet reached the learning quality target. Lesson Study focused on improvement through planning, implementation, and monitoring activities.

Cycle I began on 8 January 2024, involving model teachers and observers in the planning, implementation, and evaluation of fine art learning about shapes. Evaluation at the See stage identified shortcomings, including students' ability to work in groups.

Cycle II focused more on student group problem solving, involving the learning media of baking practice. The planning stage began on 18 January 2024, focusing on improving group problem solving. The implementation stage (Do) included motivating and implementing learning. The evaluation stage (See) was carried out to convey the results of observations, analyse success, and plan improvements.

Lesson Study has advantages, such as applicability to all classes, encouraging student interaction, and building creativity. Disadvantages, such as the relatively long time and students' resistance to group learning, need to be managed. In the context of Sekolah Dasar Unggulan Hamzanwadi, Lesson Study is an important foundation for improving learning quality through the Plan-Do-See approach.

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