In-House Training: Improving Teacher Skills in Implementing Problem-Based Learning

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Abstract: This research aims to determine the improvement of teachers' ability to apply the Problem-Based Learning Model (PBL) through IHT at Vidya Qasana Elementary School. This research used an action research approach, following the research processes outlined by Kemmis and Taggart. These procedures involved four key activities: (1) planning, (2) implementing actions, (3) observing, and (4) reflecting or evaluating. The utilization of IHT has enhanced instructors' capacity to implement PBL. The increase resulted from effectively managing activities by synchronizing the implementation time of IHT and transitioning from individual mentoring to group mentoring. This affects the level of teacher engagement in IHT activities. In the first cycle, 62.5% of teachers achieved the highest rating in the category of teacher involvement in IHT activities. This percentage grew to 87.5% in the second cycle. Regarding the implementation of IHT activities by school principals, the initial achievement in cycle 1 was 25%, which improved to 100% in the following cycle. Teachers' proficiency in implementing PBL has improved. The rise occurred after teacher engagement with IHT increased, influencing teachers' comprehension and proficiency in using PBL in the learning process. This is evident from the proportion of teachers who achieved the "very good" classification. The percentage of instructors who performed the "very good" rating in the lesson plan development part was 62.5% in cycle one and grew to 87.5% in cycle 2. Regarding implementing PBL in the learning process, the achievement rate in cycle 1 was 25%, subsequently rising to 87.5% in cycle 2.
Keywords: teacher competence, in-house training, PBL

Introduction

Teachers are one of the education components that need special competencies. Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System, teachers are required to have four competencies, namely professional competence, pedagogical competence, social competence, and personality competence personality, according to Newcomb, as quoted by Asmani (2009), can be interpreted as the organization of attitudes (predisposition) that a person has as a background to behavior. Personality refers to the organization of a person's attitudes to act, know, think, and feel, especially when he relates to others or responds to a situation. Personality is an organization of biological, psychological, and sociological factors that underlie an individual. Personality includes habits, attitudes, and traits that a person has that develop when the person relates to others. Pedagogic competence of teachers is the ability or skill of teachers who can manage a learning process or teaching and learning interaction with students. The definition of students or students according to the general provisions of the Law of the Republic of Indonesia No. 20 of 2003 concerning the National Education System is a member of the community who seeks to develop their potential through the learning process available on specific paths, levels, and types of education. Thus, learners are people who have the choice to pursue knowledge following future ideals and expectations. Personality competence is a competency related to personal character. This indicator reflects the positive personality of a teacher, namely

outgoing, patient, disciplined, honest, humble, authoritative, polite, empathetic, sincere, noble character, acting according to social and legal norms. The term teacher professional competence consists of two syllables, each of which means professional competence and teacher (Peter, 1991). In terms of language (etymology), the term professional competence comes from the English profession, which means position, job, livelihood, who has expertise. Abilities or skills that must be possessed so that teacher tasks can be completed properly. Social competence relates to communication skills, behavior, and interaction in general, be it with students, fellow teachers, education staff, parents, or the wider community. According to Janawi (2012), these social abilities are broken down into several factors, namely: being inclusive and acting objectively, adapting to the environment where they work and to the community, communicating effectively, empathically, and politely with their professional community and other professions, orally and in writing in different forms, and communicating empirically and politely with the community.

Social skills in school are an important aspect of overall student development. Social skills include individual interactions and the ability to communicate, cooperate, solve conflicts, and adapt to diverse social environments. Schools, as places for learning, must provide services to students through teaching. Learning based on lexical meaning means the process, way, and act of learning. The essential difference between this term and teaching is in the teaching act. In teaching, teachers teach, and students learn. Teachers teach from a learning perspective by providing learning facilities for their students. So, the subject of learning is the student (Suprijono, 2009) through the learning process. During the coronavirus disease pandemic 2019 Covid-19, the government implemented PJJ distance learning with an online system. As stated in the Decree of the Minister of Education and Culture No 719P2020 concerning Guidelines for Curriculum Implementation in Education Units under Special Conditions, teachers can conduct interactive learning without meeting hours per week. Learning requires an appropriate application of the model. One of the learning models that can be applied is Problem-Based Learning (PBL). Uden and Beamount (2006) stated that PBL is an instructional approach that uses problems as a context for students to acquire problem-solving skills and knowledge. The statement's purpose is that problem-based learning is a learning approach that uses problems for students to acquire problem-solving skills and knowledge. Trianto (2010) added that PBL learning model is based on many problems that require authentic investigation, namely investigations that need real solutions to real problems. Applying the PBL model is the focus of Indonesia's Teacher Professional Education program. Teachers are expected to be able to use the PBL model in the learning process.

Implementing the PBL Model in Vidya Qasana public elementary school has never been done—as a result of initial analysis and direct observation of teachers who apply problem-based learning. Teachers have not facilitated learning, how they guide students in problem-solving, and to what extent they understand PBL concepts. Based on interviews with teachers, it was found that both online and offline learning did not use the PBL model. Teachers have not been able to facilitate their learning, guide students in problem-solving, and the extent to which they understand the concept of PBL. This has an impact on the learning process. Learning becomes less active, so students' critical thinking skills and initiative become low. This can be seen from the interaction during the learning process and the portfolio collected. According to Adinda et al. (2018), People who can think critically can conclude what they know, know how to use the information to solve problems, and find relevant sources to support problem-solving. The initiative is related to the ability and willingness to improve and update work results (Rahma, 2017).

Teachers' low understanding and ability to implement PBL are also caused by the lack of integration of PBL based on curriculum analysis and lesson plans, showing that PBL is only integrated in a limited or inconsistent way in learning activities. Limited teacher facilitation skills seen from classroom observations indicate that teachers tend to dominate learning more, lack student involvement in problem-solving, and lack discussion or group work that supports PBL. Lack of training or knowledge of PBL, evidenced by surveys or questionnaires to teachers, indicates a low understanding of basic PBL concepts, appropriate teaching strategies, or practical approaches.

Based on the results of the 2020 Quality Report Card on graduate quality standards, indicators of critical thinking and problem-solving skills according to the characteristics of the 21st century, are still low. In addition, Vidya Qasana State Elementary School has never held a workshop or IHT activity by inviting speakers and delivering material on the PBL learning model. Fisher (2009) defines critical thinking as skillful and active interpretation and evaluation of observation and communication,

information, and argumentation. Furthermore, Johnson (2010) interprets the ability to think critically as a directed and straightforward process used in mental activities such as problem-solving, decision-making, analyzing assumptions, and conducting scientific research.

The purpose of this research is to: 1) describe the improvement of teachers' ability to apply the Problem-Based Learning Model through IHT at Vidya Qasana State Elementary School, and 2) investigate the improvement of teachers' ability to use the Problem-Based Learning Model through IHT at Vidya Qasana State Elementary School.

Methods

The approach used in this study is a quantitative descriptive approach. This research is school action research conducted collaboratively and participatory. The research process collaborates with teachers as collaborators and participative who work on research together. The method and design of this action research are carried out with research procedures based on the principles of Kemmis and Taggart (Suharsimi, 2012).
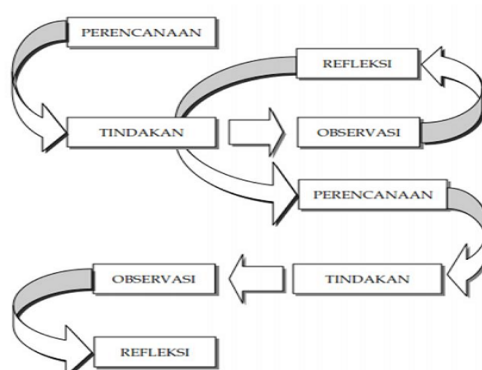

Figure 1. Flow of Research Activities

1. Planning is an organized course of action that leads to action. Plans are flexible because actions within certain limits cannot be foreseen. The plan is drawn up based on the results of initial reflective observations.
2. Action is carried out using existing planning guidelines and, in implementation, is flexible and open to changes. Observations are made during the action using actions such as observation sheets. Observation sheets to observe teacher activities when participating in IHT, principals in implementing IHT, teachers during teaching practice, and assessment of teacher learning tools.
3. Reflection is carried out by collecting all records and data needed during the implementation of the action. All these records and data are analyzed, and the results are discussed to determine the integrity of the data. In addition, the reflection results are also to discover the shortcomings that still occur during learning. The reflection results determine the following action to correct the deficiency. The reaction is in the form of cycles and subsequent meetings.

According to Arikunto (2009), while carrying out actions, teachers as implementers of action interventions refer to programs that have been prepared and agreed upon with colleagues. This research is carried out by planning that has been made before, namely learning through the Problem-based Learning (PBL) model. This action is carried out using planning guidelines that have been made and, in implementation, is flexible and open to changes. During the upgrade process, use the planning prepared in the planning section above, and the complete upgrade procedure is in the appendix. Observation is an observation activity (data collection) to photograph how far the effect of the action has reached the target (Arikunto) carried out during the action using instruments, including observation sheets. Observation sheets to observe teacher activities when participating in IHT, principals in implementing IHT, teachers during teaching practice, and assessment of teacher learning tools.

The data obtained on the observation sheet and the record of the implementation results are analyzed by looking at the weaknesses or shortcomings at the stage of the cycle and advantages to be followed up at the next stage, namely meeting one cycle 2. The implementation of this reflection was carried out with the teacher as a collaborator. The discussion aims to find the problem and then find a way out to be able to solve the problem.

Cycle 2 meeting 2. Planning School principals carry out IHT activities to improve teachers' ability to implement the PBL Learning Model through IHT activities continuing to the second cycle to evaluate the results of changes implemented in the previous cycle, improve strategies, and improve their teaching practices.

According to Arikunto (2009), reflection is a critical review activity (reflective) about changes that occur in students, classroom atmosphere, and teachers. Researchers examine the learning process, namely student activities and teacher skills, and adjust to the achievement of performance indicators in the first cycle. In addition, researchers also examine shortcomings and list problems that arise in the implementation of the prolonged cycle. Next, the researcher and the collaboration team make follow-up plans for the next cycle.

Data analysis is done by analyzing quantitative data. Quantitative data analysis by calculating the average performance improvement based on scores obtained from previously compiled observation sheets. The way to calculate the results (scores) acquired by the mean formula or average value is as follows:

$$x = \frac{\sum X}{N}$$

Information:

x	=	Mean (average)
$\sum$x	=	Number of values
N	=	Amount to average

Data categorization is used to convert quantitative scores into qualitative data. The categorization adopts Riduwan (2014), which divides into five categories. Table 2 is the achievement of observations.

Table 2. Achievement of Observations

No.	Criteria Interval	Criterion
1	0 – 20	Very Lacking
2	21 – 40	Less
3	41 - 60	Enough
4	61 - 80	Good
5	81 - 100	Excellent

Results and Discussion

Result

Effective in-house training to improve teachers' understanding and skills in managing problem-based learning must harmonize various aspects of the concept of PBL. Hands-on practice and demonstrations with classroom stimulation give teachers the opportunity to practice PBL-based teaching in classroom simulations. This allows them to get a feel for how to manage problem-centered learning firsthand. Observation and feedback facilitate sessions where teachers can observe each other and provide constructive feedback on observed PBL teaching.

Real case research considers the implementation of PBL in real cases in certain schools or classrooms. These discussions allow teachers to understand the challenges that may arise and how to overcome them. Sharing experiences by providing opportunities for teachers who have successfully implemented PBL to share effective experiences, strategies, and tips. Furthermore, training in teaching skills in skills development to improve teacher skills in designing relevant tasks, facilitating discussion, and evaluating student projects or deliverables. Preparation of lesson plans by working together in planning curriculum and learning activities that are integrated with PBL.

Access to resources that ensure teachers have access to resources, case study examples, and teaching aids that support PBL. Mentoring and mentoring can provide follow-up support, mentoring, or follow-up sessions after training to support teachers in implementing PBL in their classrooms. In addition, performance evaluation uses pre- and post-training evaluations to measure changes in teacher understanding and skills. Reflection and adjustment provide an opportunity for continued reflection and improvement based on feedback from the training. Holistic in-house training such as this can help

improve teachers' understanding and skills in managing problem-based learning in a more effective and integrated way in a teaching context

The results showed teacher change data on the PBL model. These changes became the basis for the following discussion.
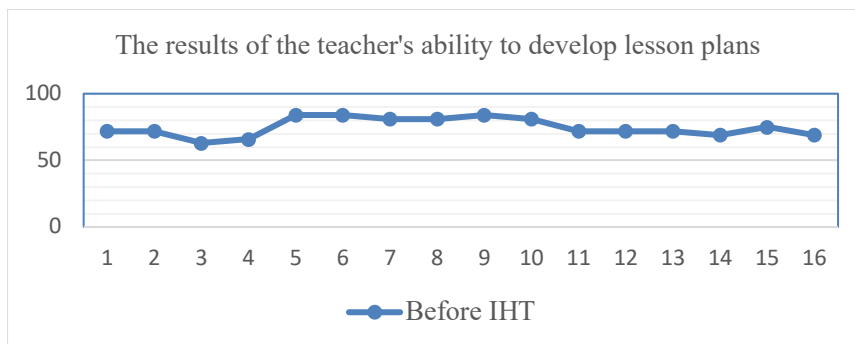

Figure 2. Teachers' Ability to Develop RPP Before IHT (Pre-test)

Figure 2 shows that before IHT, there were 14 indicators with a good predicate with a score of <83 and 2 indicators with a sufficient predicate with a score of 567. Lack of RPP in the form of writing operational words on learning indicators is not all High Order Thinking Skills (HOTS), writing learning objectives has not met the criteria of Audience Behavior Condition Degree (ABCD) Vienna Sanjaya (2008) suggests that the formulation of learning objectives must contain elements of ABCD, namely Audience (who must have the ability), Behavior (what behavior is expected to have), Condition (in what conditions and situations the subject can demonstrate ability as a result of the learning he has obtained), and Degree (the quality or quantity of behavior expected to be achieved as a minimum limit)., evaluation has not fully measured the achievement of learning indicators, teachers have not understood the steps of PBL.
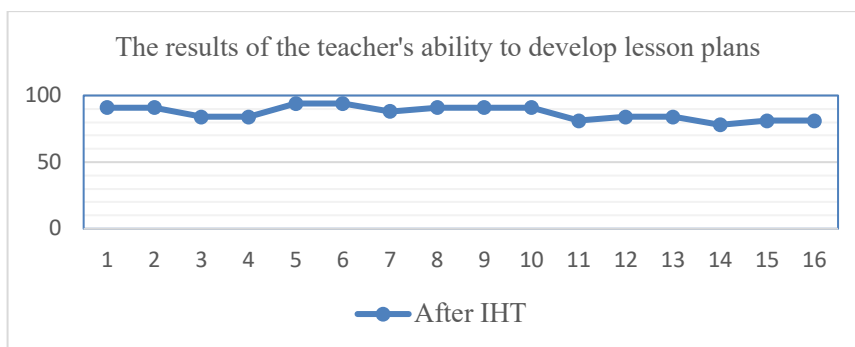

Figure 3. Teacher Ability After IHT (Post-test)

Figure 3 shows the results of teachers' ability to develop RPP after IHT shows improvement, namely 14 indicators with very good predicate and two indicators with good predicate with a score above 75. The results of the comparison of teachers' ability to develop RPP before and after IHT showed that before IHT, there were 14 indicators with a good predicate with a score of <83 and 2 indicators with a sufficient predicate with a score of 567.

The lack of RPP in writing operational words on learning indicators is not all High Order Thinking Skills (HOTS). Writing learning objectives have not met the criteria of an Audience Behavior Condition Degree (ABCD), according to Warsito (2007).
1. Audience means who is the target of our learning. The audience can be any learning participant, for example, trainees, students, or students. In this case, our audience is students.
2. Behavior is the behavior we expect students to show after the lesson. This behavior is formulated with a verb we write after the introductory phrase. Behavior describes the realm of learning. Therefore, its position is important in formulating learning objectives. Examples of this behavior

are kicking a ball (psychomotor), understanding the rules of the basketball game (cognitive), and showing support (affective)

3. Condition is a condition where students show the behavior (behavior). For example, in pairs with his friend, in a three-on-three game, he avoids wooden obstacles.

4. Degree is the criterion or level of performance that we expect from learners. For example, it is 90% accurate three times and eight successful out of 10 attempts. Evaluation has not fully measured the achievement of learning indicators. Teachers have not understood PBL steps. The results of teachers' ability to develop RPP after IHT showed improvement, namely 14 indicators with very good predicate and two indicators with good predicate with a score above 75.

The principal's observation of learning carries out the third stage of teacher learning practice. The results of the IHT application are obtained in the form of data on the teacher's ability to apply PBL. The results of the observations are as follows.
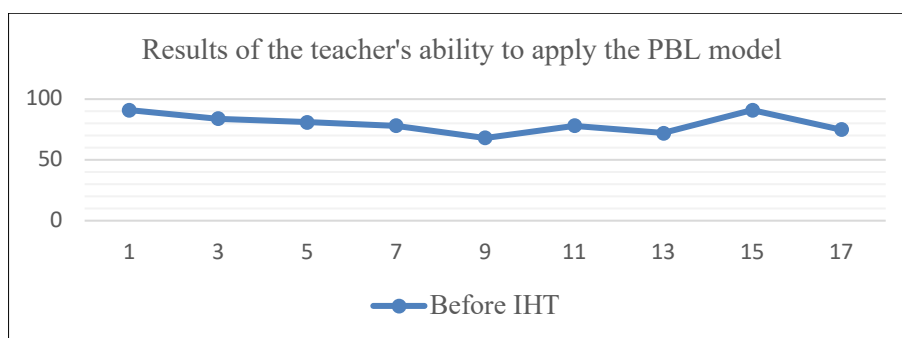

Figure 4. Teacher's Ability to Apply PBL Model Learning Before IHT

Figure 4 is a recap of data from the teacher's pre-test before participating in IHT activities. The number of items is 10 as a percentage of the number of achievements. No one has obtained a very good category. The observation results are seen from the scores obtained by the teacher. There was a teacher who obtained the sufficient category, then seven teachers entered the good category. No teacher has obtained a very good category at the achievement percentage. The results of teachers' understanding of data about the PBL model are in the form of obtaining post-test scores.
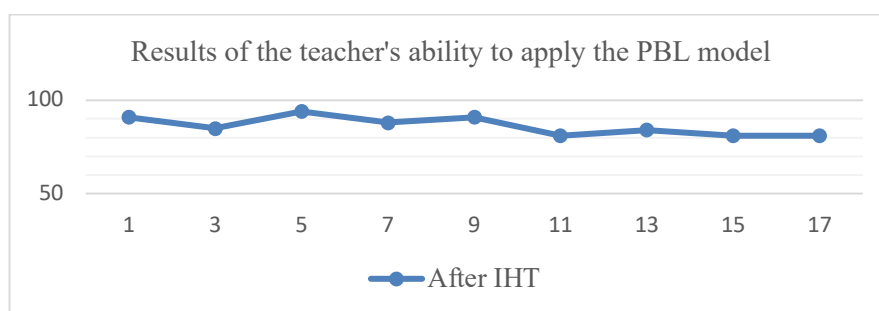

Figure 5. Teacher's Ability to Apply PBL Model Learning Before IHT

Figure 5 is a post-test recap data of teachers after participating in IHT activities. The number of items 10, when viewed as a percentage of the number of achievements, 100% obtained the very good category. Based on the results of observations seen from the scores obtained by teachers, eight teachers were included in the very good category. When viewed as a percentage of the number of achievements, 100% obtained the very good category.

Teachers' ability to apply PBL Model learning before and after IHT. Before, IHT showed 16 indicators with a good predicate, but there were 11 indicators with a score of ≤ 75. The shortcomings of teachers in applying the PBL model in learning are often forgetting to convey learning objectives when opening lessons, not mastering the material to be taught, not mastering the syntax of PBL learning, not using the right learning media based on PBL, have not carried out appropriate PBL-based evaluations. The results of teachers' ability to apply PBL model learning after IHT showed an increase, namely 16 indicators with a very good predicate and one indicator with a good predicate with a score above 75.

The fourth step is RTL. In this step, teachers and principals carry out follow-up plans to implement continuous learning by applying the PBL learning model.

The results show the optimization of teacher competence in implementing the PBL Learning Model at Vidya Qasana Yogyakarta Elementary School. This is because teacher participation in IHT is done by choosing the right time, requiring teachers to prepare materials and syllabi before developing learning tools, and learning the right learning sequence again. For principals, make schedule adjustments between teachers and principals.

The success that has been achieved will continue to be developed and become a school program to improve and maintain the quality of teachers. The quality of teachers in question is to improve their ability to apply the PBL learning model. The quality of teachers in implementing PBL will impact students' critical thinking and problem-solving skills according to the characteristics of the 21st century. Teacher mentoring programs in implementing PBL learning models will be included in school programs continuously.

Application of IHT in Improving Teachers' Ability to Apply Problem Based Learning Learning Model

The implementation of IHT activities regarding the application of the PBL learning model cycle one has not reached 75%. Then, IHT activities are continued in cycle 2 with changes in the method. In cycle one, the implementation of IHT is carried out classically, while in cycle 2, the implementation of IHT is carried out in groups. This is because, during cycle 1, teachers lack focus, and mentoring is less than optimal. In cycle 2, teachers are more focused, and mentoring is more optimal. In cycle 1, the time synchronisation problem between teachers and principals during mentoring is also an obstacle, so time management is more regulated in the second cycle. Data obtained from cycle 1 to cycle 2 showed increased teachers' involvement in developing lesson plans and learning using the PBL model. The results of the data cycle increase data are seen in the following Table 3.

Table 3. Percentage of Teacher Participation Achievement and IHT Implementation of Principals Cycle 1 to Cycle 2 Increment

No.	Aspects	Cycle 1 achievement percentage	Cycle 2 achievement percentage
1	Teacher participation	62.5%	87.5%
2	Implementation of IHT principals	62.5%	100%

Table 3 shows a 25% increase in percentage achievement for teacher participation. In the aspect of IHT implementation, school principals increased by 37.5%. This happened because there was a change in the method of IHT activities. In Cycle 1, it is done classically, while in Cycle 2, it is carried out in groups. This is a finding in this school action research because, after the change from classical to group, there was an increase in the preparation of lesson plan and the application of PBL in learning.

Table 4. Percentage of Teacher Understanding of PBL Based on Pre-Test and Post-Test Results

Aspects	Pre-Test	Post Test
Teacher Understanding of the PBL Learning Model	0 %	100 %

Based on Table 4 on the aspect of teacher understanding of the PBL learning model, the achievement of pre-test and post-test results increased by 100% from the number of teachers. This happens because there is assistance in IHT activities in implementing the PBL learning model. This is a finding in this school action research because after mentoring teachers through IHT activities in implementing the PBL, there was an increased understanding of the PBL model in learning.

The Ability of Teachers to Apply the Problem-Based Learning Model

Based on the study results, the number of teachers able to apply the PBL cycle one has not reached 75%and, and only one teacher has obtained a very good category in the development of RPP. In applying PBL, only one teacher obtained the excellent category. The reason for the lack of achievement of research success indicators is that teacher participation in participating in IHT has not been maximized. So that it impacts teachers' ability to develop learning tools and apply them in learning. After IHT activities were continued in cycle 2, there was an increase in teachers' development of lesson plans and learning using the PBL model. The results of the data cycle increase data are seen in Table 4.27 below:

Table 5. Percentage of Achievement of RPP Development and PBL Learning Increase from Cycle 1 to Cycle 2

No.	Aspects	Cycle 1 achievement percentage	Cycle 2 achievement percentage
1	Development of RPP PBL	62.5%	87.5%
2	Application of PBL in learning	25%	87.5%

Based on Table 5 on the aspect of RPP development, there was a 25% increase in the achievement of the percentage of the number of teachers. In implementing PBL, there was an increase of 62.5% in the number of teachers. This happened because there were changes in teacher participation and mentoring methods carried out. Increased participation in IHT provides more opportunities for teachers to learn about PBL and its application. The impact of increasing the duration of participation has led to a change in understanding of PBL. This is a finding in this school action study because after there is a change in teacher participation, there is an increase in the preparation of lesson plan and the application of PBL in learning.

Nasrudin (2022) states that cognitive training is training to improve brain-related abilities, including memory, reasoning, and information processing. It was important to develop core abilities and self-control. The method can be through cardiovascular fitness exercises or playing online games. Alternatively, the trainer asks participants to complete a cognitive task. Macan et al. (2000) describes time management as when individuals predetermine needs and desires and then breastfeed them based on the order of importance. It means that there is a specific activity, namely setting goals to achieve needs and wants. According to Soemarjadi (1992), skills are behaviors acquired through learning stages, skills derived from rough or uncoordinated movements through gradual training of irregular movements that gradually change into smoother movements, through the process of coordination discrimination (difference) and integration (unity) so that skill is obtained needed for certain purposes activities in the form of synchronizing implementation time IHT and the mentoring process from classical to group. This has an impact on teachers' participation in IHT activities.

Problem-based learning is known as active learning because learners find information on their own in the process. This is emphasized by (Ramadhani, 2021) that students are trained to find the information they need. PBL can support the performance of students in learning. Teachers must be able to carry out problem-based learning in the right way. The stages of the PBL are: 1) directing students to a problem, 2) creating student learning groups, 3) conducting individual and group research, 4) analyzing and delivering ongoing work, 5) the resolution process to analyze and assess problems (Yelnosia & Taufik, 2020). Using the PBL makes students become active and dare to submit opinions in the learning process. It can be seen from the learning of the Problem-Based Learning model assisted by concrete media that emphasizes the involvement of students in discovering their knowledge so that at the end of the research, students are given tests and students are still imagined with the problems learned previously with the help of concrete media. Students can also be active in group discussions, and teachers are facilitators and motivators in learning. The PBL model can encourage students to have the desire to learn independently. For example, when groups are formed heterogeneously, students with higher abilities are eager to help students with lower abilities in terms of remembering material and solving problems given by the teacher. In the group, students actively interact and try to solve real problems so that learning can run optimally.

The application of problem-based learning can increase students' critical power. In addition, based on observation, the ability to analyze, identify, think logically, solve mass, and make the right

decisions to conclude (Fakhriyah, 2014). In line with Fakhriyah et al. (2013), they suggest that based on their research, there are different learning outcomes for students who use PBL and those who use other than PBL. The PBL method is very effective for improving student motivation and learning outcomes. This is seen from the indicators of PBL learning methods and learning outcomes. Besides that, it is seen from the high motivation of students. Meanwhile, Lidinillah (2013) stated that PBL directs students more and encourages them to achieve learning goals according to the teacher's plan. As an approach, PBM has advantages that can improve and encourage students to think critically about the problems they face.

According to Nyoman Wirata (2019), applying the PBL model to improve student science achievement interferes with learning (Silberman, 2002). Therefore, a strategy is needed to present information so that students can store the information for a long time or in the long term. The strategy is strategic mind mapping. A similar study by Tanti et al. (2017) shows that: (1) through the application of the Problem-Based Learning approach in thematic learning can improve thematic learning outcomes in grade II students indicated by the number of students who achieve KKM 90% according to the established achievement indicators, and (2) through the application of the Problem-Based Learning approach to thematic learning can improve the implementation of the learning process in the classroom.

The research analysis results show that with the application of this PBL, there is an increase in student learning outcomes. This is because the PBL is a problem-based learning model directed at increasing the active role of students during the learning process (Abarang & Delviany, 2021; Budhi et al., 2018; Desriyanti & Lazulva, 2016; Emrisena & Suyanto, 2018). The problems used in the problem-based learning model are problems that are generally faced by students in everyday life (Fatmawati & Sujatmika, 2018). The problems presented in the PBL process will stimulate students' creative thinking regarding how to solve these problems (Febrita & Harni, 2020). In addition to improving creative thinking skills, the PBL will help students find new concepts in various fields of science (Masykurni et al., 2017).

Learning using a PBL has characteristics such as being carried out by asking questions/problems, focusing on interdisciplinary relationships, authentic investigation, producing products, exhibiting them, and collaborating (Fatmawati & Sujatmika, 2018; Puyada & Son, 2018; Zainuddin et al., 2016). The characteristics of problem-based learning emphasize using intelligence from individuals, groups, and the environment to solve meaningful, relevant, and contextual problems (Agustina & Fitrihidajati, 2020). In PBL, problems are identified by finding causal relationships and applying concepts that follow the problem (Alan & Afriansyah, 2017). Students carry out this process through discussion so that they can express opinions and ideas in their groups (Febrita & Harni, 2020). This makes students happier, making the learning process more meaningful (Handoyono & Arifin, 2016; Jiniarti et al., 2015). Feelings of pleasure towards learning can generate interest and foster motivation to learn so that it will give a deep impression of what is learned. The knowledge gained will be stored for a long time in students' memory.

The results obtained in this study are in line with the research that previous researchers have done. The results of previous studies have also shown that using the PBL model can also improve students' critical thinking skills, especially in solving problems (Anugraheni, 2018). In addition to improving critical thinking skills, using problem-based learning models can improve students' scientific attitudes and learning outcomes (Nelli et al., 2016). Further research also revealed that using the problem-based learning model could significantly improve students' learning outcomes and communication skills (Budhi et al., 2018). Based on some of the results of these studies, it can be seen that PBL can improve student learning outcomes. In addition, this learning model can also improve creative thinking skills and increase the active role of students in the learning process. This kind of learning model will certainly help teachers in achieving learning objectives.

Conclusion

The ability of teachers to apply the PBL through the application of IHT has increased. In cycle 1, the number of teachers who obtained the very good category regarding teacher participation in IHT activities was 62.5, which increased to 87.5. In the aspect of the principal carrying out IHT activities, cycle 1 achievement of 25 then increased to 100. The principal uses a small group mentoring method. By working together and discussing, students gain more knowledge and experience from the activities

they do both in and outside the classroom to get increased results on teacher participation. Furthermore, the headmaster implements IHT by managing implementation time with teachers. Moreover, time management is in the form of synchronizing the schedule of activities between the principal and teachers related to mandatory tasks with IHT activities.

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