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Implementation of *Problem Based Learning* (PBL) *Learning* ModelinMathematics Subjects at Madrasah Ibtidaiyah

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Abstract

Learning mathematics is a scourge for students; mathematics is considered difficult and scary, so it takes effort from a teacher to achieve the expected goals and fun. Mathematics requires a learning model to help students feel comfortable and happy; it is no longer a lesson they fear but a subject of interest. This study aims to provide solutions to students to follow the learning maximally and according to the goals to be achieved. This study is a type of qualitative descriptive research. The subjects in this study were teachers in MI Darussa'adah Domasan Kalidawir Tulungagung—data collection methods using observation, interviews, and documentation. Data analysis techniques used are data reduction, data presentation, and conclusion. The results of this study explain that mathematics teachers apply the PBL model with several steps according to PBL syntax. Teachers experience several obstacles in using the Problem-Based Learning model, namely, lack of learning resources, lack of students' literacy skills, and limited time. However, the problem-based learning model has advantages in improving mathematics learning activities, including achieving goal activities so students can receive and achieve the target reference value or KKM.

Pembelajaran matematika menjadi momok bagi siswa, matematika dianggap sulit dan menakutkan sehingga diperlukan usaha dari seorang guru untuk mencapai tujuan yang diharapkan dan menyenangkan. Matematika memerlukan suatu model pembelajaran yang dapat membantu siswa merasa nyaman dan bahagia, bukan lagi pelajaran yang ditakuti siswa, melainkan mata pelajaran yang diminati. Tujuan penelitian ini untuk memberikan solusi kepada siswa agar dapat mengikuti pembelajaran secara maksimal dan sesuai tujuan yang ingin dicapai. Penelitian ini merupakan jenis penelitian deskriptif kualitatif, subjek dalam penelitian ini adalah guru dan di MI Darussa'adah Domasan Kalidawir Tulungagung. Metode pengumpulan data menggunakan observasi, wawancara, dan dokumentasi. Teknik analisis data yang digunakan adalah reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian ini menjelaskan bahwa guru matematika menerapkan model PBL dengan beberapa langkah sesuai sintaks PBL. Guru mengalami beberapa kendala dalam penerapan model Problem Based Learning, yaitu: kurangnya sumber belajar, kurangnya kemampuan literasi siswa, dan keterbatasan waktu. Namun model pembelajaran berbasis masalah mempunyai keunggulan dalam meningkatkan aktivitas pembelajaran matematika, termasuk tercapainya aktivitas tujuan sehingga siswa mampu menerima dan mencapai target nilai acuan atau KKM.
Keywords: *Learning Model; Mathematics; PBL.*

Introduction

Education is part of an effort to provide insight into humanity so that it is a means of educatingthe nation's life through several types of subjects that are tailored to the needs and achievements of students. One of the subjects in education is mathematics (Hendra, 2019). Mathematics is one of the branches of science that has an important role in the development of science and technology, both as an application tool inother fields of science and as a tool for the development of mathematics. Mastery of students' mathematical knowledge is an inevitable need in organizing reasoning and decision making in an increasingly competitive era. Mathematics is not a science that aims only for its own sake, but a sciencethat is useful for other sciences. In other words, mathematics has a very important role in other sciences,especially science and technology (Siagian, 2016).

Mathematics is an important subject that students must learn at all levels, whether in elementary school (SD), junior high school (SMP), or senior high school (SMA) or equivalent. Mathematics is taught from elementary school age with the aim of developing students' thinking skills, helping them to be creative in solving problems, and increasing students' interest in learning (Astuti, 2021). Learning mathematics for elementary school children is certainly a special learning implementation strategy that relies on the teacher's ability to plan and implement learning, so as to create PAIKEM learning (Ari Pertiwi, 2018). The learning environment of elementary school students is still at a certain stage in accordance with the basic terms ofreference in accordance with the level of education units. Therefore, mathematics learning is expected tocreate an atmosphere that allows to give rational reasons about daily events and classify objects according to their respective categories in improving students' thinking skills (Puspaningtyas, 2019).

However, based on existing facts, it is revealed that mathematics lessons are often a fear for students because they are considered a subject that is difficult for students to understand and accept. Students are reluctant to take mathematics subjects because they think that the subject is complicated because it almost entirely contains numbers, thus allowing students to think more deeply. This is an interesting thing to research, namely that the problems faced by students need to be addressed wisely, one of which is by implementing a learning model that can provide new media or ways for students to participate in mathematics learning activities. In this way, mathematics subjects that are difficult for students to follow will be easily accepted, especially as they relate to various students' daily lives.

Mathematics learning is closely related to everyday life, especially those related to the concept of counting, so it is necessary to have a learning model that helps students solve problems by creating positive learning conditions in solving problems related to everyday life. A suitable learning model for solvingeveryday problems is the Problem Based Learning (PBL) learning model (Febrina, 2020). Problem-based learning is alearning method that seeks to apply real-world problems as a context for students to train critical thinking and develop problem-solving and communication skills and gain important knowledge and concepts from the educational material discussed. The problem-based learning model can place students as the center of learning, so it requires thorough student activeness to solve any problems faced by students independently by building existing knowledge and understanding in themselves.

The characteristics of *problem-based learning* (PBL) are implementing contextual learning, the problems given can motivate students in learning, the integrity of learning is motivated learning with anunlimited number of problems, students actively participate in learning, work together, students have diverse skills, experiences and concepts (Fauzia, 2018). The implementation of contextualized learning is a characteristic of the *problem-based* learning model that includes a material through several things related to students'daily lives. Some problems related to students' daily lives will certainly be able

to attract students in solvingproblems with answers that can motivate student learning. Students play an active role in learning activities by grouping or working together between students. In *problem-based learning* (PBL) model learning activities, students will have new skills or concepts that vary according to the learning experience provided by the teacher.

According to Uden and Beaumont, there are several benefits that can be observed when studentslearn using the problem-*based learning* (PBL) learning method, among others, students can retain the knowledge they get, foster problem-solving skills, reason carefully and interact skills, feel learning, increase enthusiasm for learning, can interact between group members, improve learning methods, and increase communication skills (Ruminawati et.al., 2018). The benefits received by students are certainly also something that is part of theeducational objectives and the role of the teacher in teaching and learning activities. The benefits of applying the *problem-based learning* (PBL) method will make it easier for students to participate in learningactivities and will also have a high enthusiasm for learning. However, basically the *problem-based learning* method (PBL) also has shortcomings or obstacles in its implementation so that this needs to be studiedin more depth for evaluations that can be made on the *problem-based learning* method (PBL) in learning activities, especially mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung.

Some previous studies that serve as basic references in this study include Ruminawati et al. (2018)revealed that PBL is a learning method that is quite effective in improving student learning outcomes, Siti Taspiah (2021) the *Problem Based Learning* learning model is able to improve student learning outcomes through steps, namely student orientation, organizing, guiding individual and group investigations, developing and working, analyzing and evaluating the process, Astuti (2021) revealed theresults of the validators showed that a valid *Problem Based Learning-based* LKPD had been produced both from content, construction, and language, with characteristics such as the LKPD produced had been adjusted to the characteristics of *Problem Based Learning*. Another research that can be used as a reference is research from Masrinah (2019) which states that critical thinking skills can be improved through PBLbecause the learning method is based on real-life problems and students are not only required to understand these problems but also to work together to solve these problems so as to stimulate children'sabilities and skills, especially critical thinking skills. Thus, the context of this research is certainly different from several previous studies, namely related to problem-based learning models in mathematics learning so that it will be a different research in the realm of problem-based learning models.

Based on preliminary data obtained by researchers, math scores at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung experienced a significant increase after the teacher implemented a *problem-based learning* model in learning mathematics, students were excited in the learning process, and added to the social sense among students with group activities and joint discussions. Students have more interest in participating in math learning activities and even have more enthusiasm in solving various problems. The cooperation that exists in mathematics learning activities at MI Darussa'adah DomasanKec. Kalidawir Kab. Tulungagung is carried out together to find answers to several problems by discussing together so that they will learn together and understand each other and share their understanding of theproblems that have been given by the teacher.

The results of pre-interviews with Mrs. Luluk Insiatin, as a mathematics teacher, stated that thereason for choosing a *problem-based learning* model in mathematics learning at MI Darussa'adah DomasanKec. Kalidawir Kab. Tulungagung is the application of concepts aimed at making learning activities more meaningful if they use problem solving related to students' daily lives. By using a problem-based learning model, students are very enthusiastic in participating in math learning activities. The

stages in the problem-based learning model are carried out by dividing several groups, so students will compete to solve problems according to the problems given. In this case, students who consider math subjects to be difficult subjects actually feel happy and comfortable with math subjects so that the average student score is above KKM (Maximum Criteria Completeness). However, in practice teachers still experience several obstaclesin applying the PBL learning model in math lessons.

Based on the explanation of the background of the previous problem, the purpose of this study isto find out and find the implementation of the *problem-based learning* model (PBL) in mathematics subjectsat MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung which includes the essence of the application of the *problem-based learning* model (PBL) in mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, obstacles or obstacles faced by teachers when applying the *problem-based learning* model (PBL) in mathematics subjects at MI Darussa'adah Domasan Kec. KalidawirKab. Tulungagung, and the benefits obtained by teachers when applying the *problem-based learning* model (PBL) in mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung.

Research Methods

The approach that researchers use in this research is a descriptive qualitative approach with the Miles & Huberman analysis technique, namely by searching for data until the point of saturation or no longer finding new data (Miles & Huberman in Sugiyono, 2015). This study aims to determine the application of the problem-based learning model (PBL) in mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung so that the stages of learning activities will be found to obstacles and encouragement in learning activities. The presence of researchers in the application of the problem-based learning (PBL) learning model in mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is done by participating directly as a data collector as well as an instrument of qualitative research being conducted.

The data sources that researchers will use in this study are using primary data sources and secondary data sources, which are as follows: (1) Primary data sources, researchers collect data from teachers based on field data that researchers will directly obtain, namely from math teachers Mrs. Luluk Insiatin, S.Ag, Siti Mu'awanah, S.Pd.I, and M. Badrul Munir, S.Pd.I and several students as follows: Ahmad Rifa'i Zamzami, Fariz Kafa Fahreza, and Azkia Aulia Zulfa. (2) Secondary data sources are data sources that indirectly provide data to data collection, one of which is data from various literature studies. Observation was carried out by directly visiting the research location, namely MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung and continued the interview stage to the informant then the documentation in this study was carried out based on a series of stages and the completeness of the data obtained from observations and interviews. The data analysis technique used is miles and huberman with interactive data analysis steps that take place continuously until saturated data is found. The flow in this data analysis includes data reduction, data presentation, then data verification or conclusion drawing. Researchers then checked the validity of the data with data triangulation and discussions with peers.

Results and Discussion of Findings

Results

Researchers carry out a series of stages in data collection, namely by conducting observations, interviews, and documentation. Observations made by researchers by following a series of mathematicslearning activities with the application of the *problem-based learning* (PBL) learning model at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung. The series of learning activities are carried out solemnly and conducive so as to increase the level of success in teaching and learning activities. From the observations made, researchers found a condition that the teacher was able to provide teaching

and learning activities that were friendly and comfortable for students, as well as students being able to participate in activities with enthusiasm.

The following are several research findings related to the application of the problem based learning (PBL) learning model at MI Darussa'adah Domasan District. Kalidawir District. Tulungagung:

1. Mathematics subject teachers carry out steps in the application of *problem-based learning* (PBL) learning models in mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung through a series of stages, namely the teacher opens the class by saying greetings and praying together, before starting the lesson the teacher checks attendance at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, so that the teacher can find out which students are in school or not in school in addition to knowing how the students are doing. The teacher invites students to review the material that has beentaught and directs students about the previous material related to the material to be delivered. The teacher conveys to students the objectives of the learning that will be conveyed, so that students know the competencies that will be achieved in the learning. The teacher then explains to the students about the *problem-based learning* model simply so that students are able to follow the steps that will be implemented in the learning. The teacher divides the students into several groups randomly by grouping students with high and low math abilities or vice versa. The teacher distributes student worksheets containing real problem-based problems in everyday life. Students work together with their respective groups in working on and solving problem-based problems.

   The teacher guides and encourages students individually and in groups to find the information needed in solving the problems that the teacher has given before. In the next stage, the teacher guides students to prepare the results of the problem solving processthat has been carried out then formed into a report. The results of this report will later be given to the teacher, it can be in the form of documentation, recordings or other report products. The teacher chooses students randomly from each group to present the results of solving problem-based problems in front ofthe class or stand in the circle of their respective groups. After all groups present the results of solving problem-based problems, the teacher gives conclusions from student presentations and conveys an assessment of student results, so that students know which results are correct or results that must be improved.

   The teacher then invites students to ask questions, refute, provide input or provide responses to what the teacher has concluded and assessed from the students' presentations. Students are asked to collect the results of worksheets and discussions from their respective groups. To close the lesson, the teacher summarizes the conclusions and key points of the lesson, and dictates the students to write the teacher's summary. Written and oral assessment activities for students and by students and also by students for teachers with the aim of expressing constructive impressions, messages, hopes, and criticism of the learning process so that it can be used as a reference in further learning. The teacher reminds students to study the material that will be discussed in the next lesson. The teacher asks one of the students to lead the prayer after learning, with the hope that the learning that has been carried out and is useful for teachers and students, and finally the teacher says greetings before leaving the classroom.

   Researchers have also conducted interviews with teachers and students of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung related to the implementation of *problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung with the followinginterview results.

   "So it's like this, ma'am, our teaching and learning activities are good, yes good, difficult, difficult,

so it's more about how we as teachers can arrange the right way or learning model for children, especially when it comesto math subjects, which in fact many children do not like numbers. So that's why we as teachers need to formulate what learning model is suitable and can be a motivation for them. And finally after we discussed ittogether, it seems that this problem-based learning model will be a learning model that will be of interest tochildren, especially since this kind of learning model will be related to their daily lives. So yes." (Luluk Insiatin, S.Ag., personal communication on September 07, 2023)

Based on these interviews, the background of the implementation of problem-based learning models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is one of the teacher's efforts to be able to create comfortable learning activities for students. Especially with regard to subjects that are considered difficult by students, the teacher seeks a way or learning model that is able to motivate students to be interested and enthusiastic in participating in learning activities. The problem-based learning model will invite students to think more deeply through a discussion related to students' daily lives.

2. Teachers benefit from implementing the problem-based learning model in mathematics subjects, making students more enthusiastic and enthusiastic in participating in the ongoing learning process, training students to express their ideas or opinions during the learning process, and students be more creative and critical in reviewing each lesson material presented.

The results of the interview were also conveyed by other mathematics teachers regarding the benefits obtained from the implementation of problem-based learning models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung:

"When it comes to the benefits we get from the application of this PBL model, yes, we as teachers, especiallymath teachers, feel very helped, of course, especially since our students are more enthusiastic about learningbecause they feel less bored and feel entertained by this way of learning. Most of our students seem very enthusiastic about participating in every stage of learning activities with this PBL model, this can already beseen at the beginning when we asked to move and join the group so they were very enthusiastic at this initialstage. Our students became more active in asking questions or expressing opinions so that they did not feel tense in participating in learning activities with this PBL model. They complete tasks related to everyday lifealso feel relaxed, counting casually, more importantly, when there are some students who do not understand so well, they will encourage each other in learning and their various knowledge will collaborate in solving the problem so that they consciously or unconsciously have thought critically and of course they are finally able to find ideas from the results of collaborative discussions from their group." (Siti Mu'awanah, S.Pd.I., personal communication on September 07, 2023)

From the results of interviews with teachers and students of mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, it was conveyed that the benefits of implementing a *problem- based learning* model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab.Tulungagung, namely making students more enthusiastic and enthusiastic in participating in the learningprocess, training students in expressing their ideas or opinions during the learning process, and studentsare more creative and critical in examining each lesson material presented. The results of the interviewwere also conveyed by other mathematics teachers regarding the obstacles obtained from the implementation of the *problem-based learning* model in the mathematics subject of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung:

"The obstacles we have encountered so far are more about our lack of media or learning resources, Mother. So if we prepare learning activities, it is enough to adjust the material in

the guidebook with a problem-based learning model. I as a teacher try to prepare questions that are in accordance with the environmental or daily conditions of students, but if the media or learning resources are somewhat less than optimal. Then again, some of our children still need to learn a lot, especially their lack of literacy, which is also homework for usteachers. Including that, in my opinion, is an obstacle in the application of this problem-based learning model." (M. Badrul Munir, S.Pd., personal communication on September 07, 2023)

Another opinion was also conveyed by students of MI Darussa'adah Domasan Kec. Kalidawir Kab.Tulungagung who followed the implementation of the *problem-based learning* model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, namely:

"What is it ma'am, for me, I just like math because I like counting. If the teacher gives a new way in class, Ibecome more happy but sometimes I feel like the time is really fast. But I'm happy anyway because my friends and I are like a group, like while playing too but it's really fun." (Ahmad Rifa'i Zamzami, personal communication on September 07, 2023)

3. Teachers experience obstacles in the problem-based learning model in mathematics subjects, namely the implementation of a lack of learning resources, students' poor literacy skills, and limited time.

Opinions that are in line with the obstacles are also conveyed by students of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung who follow the implementation of *problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, namely:

"In my opinion, ma'am, the obstacles that I and my friends encounter when participating in math learning with this model are more about our lack of cohesiveness. So if the random grouping is a bit difficult becausethere are those who still don't understand, sometimes they just stay quiet and follow but don't help us. But our teacher helps us by explaining. Then again, the time is short so it feels like it's over quickly." (Fariz Kafa Fahreza, personal communication on September 07, 2023)

From the results of interviews with teachers and students of mathematics subjects MI Darussa'adahDomasan Kec. Kalidawir Kab. Tulungagung, it was conveyed that the obstacles to the implementation of*problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung are lack of learning resources, students' lack of literacy skills, and limited time. Researchers also conducted interviews with mathematics teachers regarding the advantages of implementing a *problem- based learning* model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab.Tulungagung:

"Yes, so when talking about the advantages, of course, as long as we teach with a problem-based learning model,we feel very helped. So we have a new way of teaching and learning activities. The thing that we feel is mostimportant in the application of this learning model, especially in math subjects, is that children are more enthusiastic about working together in groups. They try to solve the problems together, even though there are some who still don't understand, but slowly they are getting better." (M. Badrul Munir, S.Pd., personal communication on September 07, 2023)

Opinions that are in line with the advantages of implementing a *problem-based learning* model inmathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung were also conveyedby students of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung who participated in learning activities, namely:

"In math class, we are invited to work in groups when working on the problems, so my friends

and I do it by discussing with a group of friends. Then again, if there are those who don't understand, they will be explained by those who already understand, but sometimes the teacher still explains it again." (Azkia Aulia Zulfa., personal communication on September 07, 2023)

Another opinion was also conveyed by the mathematics teacher at MI Darussa'adah Domasan Kec.Kalidawir Kab. Tulungagung related to the advantages of implementing a *problem-based learning* model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, namely:

"In the application of this problem-based learning model, we as teachers still try to assist our children, ma'am, so there is no way we will let them learn alone. It's just that we also try to make them able to solve the problems we give, especially those related to problem solving according to their daily lives. We are here as facilitators as well as motivators for our students here so that they are able to be independent and learn more actively, so that they will later be able to apply it in their daily lives so it is more about how our students are able to explore themselves in learning activities so that they are comfortable and understand the material in learning, of course, which is related to their daily lives." (M. Badrul Munir, S.Pd., personal communication on September 07, 2023)

Teachers and students said that the application of the *problem-based learning* (PBL) learning modelin mathematics subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung has advantages, namely: students are taught to think critically at an early stage, students can solve problems in the rightway, students are taught to cooperate with their group friends and can respect the opinions of their respective group friends, make it easier for teachers in the learning process because teachers are able tobecome facilitators and motivators in learning, and students can also apply it in everyday life.

Discussion of Findings

Stages of the Applications of the *Problem Based Learning Model* (PBL) in Mathematics Subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung

The application of the stages or steps in the *problem-based learning* model applied in the mathematics subject of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung has been carried out by the subject teacher based on a series of stages of the *problem-based learning* model in accordance withwhat Arends stated, namely introducing students to a problem study, organizing students in teaching andlearning activities, guiding individual and group investigations, developing and presenting work, and analyzing and evaluating the problem-solving process (Erik, 2018). This is corroborated by the results of researchconducted by Nur Fitriani Zainal in 2022 with the research title "Problem Based Learning in Mathematics Learning at Elementary Schools / Madrasah Ibtidaiyah" with the results showing that *Problem Based Learning* is a recommended learning model in learning Mathematics at the SD / MI level because it cansupport the improvement of students' higher-level thinking skills through investigation and problem solving which has implications for the development of students' knowledge construction. Another studythat is also in line with the stages of the *problem-based learning* model (*problem-based learning)* applied to the mathematics subject of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is Husnul Hotimah with the title "Application of Problem Based Learning Methods in Improving Storytelling Ability in Elementary School Students in 2020" which results in learning by using problem-based learning methods can improve students' ability to tell stories, especially at primary level students.

In accordance with the theory corroborated by previous research, the implementation of *problem-based learning* models applied to mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung has also implemented stages or steps in practice which are also corroborated by

researchconducted by Liska Ariani et al, in 2019 with the research title "Analysis of Creative Thinking in the Application of Problem Based Learning with Science, Technology, Engineering, and Mathematics Approach" with the results of the study found that the average student's creative thinking ability was ingood criteria with a score of 47.84 out of a total score of 60 and the highest achievement in the indicatorof seeing information from different points of view (89.48%), and students gave positive responses to the learning carried out. The conclusion of this study is that students' creative thinking skills after applying the Science, Technology, Engineering, and Mathematics-based Problem-Based Learning Model onsolubility and solubility product constant (Ksp) materials are in good criteria.

The following are the stages carried out in the application of the *problem-based learning* model applied to the mathematics subject MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung:

First, introducing students to a problem study. Mathematics subject teachers at MI Darussa'adahDomasan Kec. Kalidawir Kab. Tulungagung have tried to communicate learning objectives to students by explaining what logistics or materials and tools are needed in solving problems. This is related to effortsto direct students to be able to accept and understand what the teacher says so that they can apply whatthe teacher says. Students' understanding of the tasks or activities to be carried out is of course also influenced by the teacher's ability to convey them. Thus, the teacher must be able to convey a sequenceof steps in learning activities, especially in explaining a problem study and be able to motivate students to pay attention to problem solving activities. Efforts made by mathematics teachers MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung in carrying out the first series of stages are in accordance with those put forward by Arends in the steps of the learning process, namely starting learning activities withopening greetings and prayers which are the first invitation or condition when learning will begin. In delivering greetings and inviting prayers, it needs to be done in an interesting way so that students willhave more enthusiasm and motivation to learn when at the beginning they feel comfortable in starting learning. Next, the teacher conducts student attendance to find out the condition of students including attendance, permission, and illness. The teacher also repeats the material or *reviews the* previous subjectthis aims to review the previous material by remembering or trying to explain at a glance its relationshipto the material to be delivered. Teachers also need to convey learning objectives to students so that students will be able to understand what will be achieved based on the material presented and some problems that must be solved.

Second, organizing students in teaching and learning activities. Mathematics subject teachers MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung have attempted to assist students in identifying and organizing learning in a way that is suitable for problem solving. The directions delivered by the teacher are in accordance with the stages of problem solving based on existing material or formulas, it'sjust that the essence of the application of the PBL learning model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is adapted to problems that exist in everydaylife. The efforts of mathematics teachers MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung in organizing students are done by dividing students into several groups randomly, namely by grouping students with high and low mathematical abilities or vice versa. The random division of groups will makeit easier for students to recognize each other's friends so that they will complement each other to work together. The teacher then distributed student worksheets containing real problem-based problems in accordance with everyday life. The teacher also tries to guide and assist students to work together withtheir respective groups in working on and solving problem-based problems. In this stage, students can discuss in groups so that it will make it easier for them to understand together.

Third, guiding individual and group investigations. Mathematics teachers of MI Darussa'adah Domasan, Kalidawir sub-district, Tulungagung district have tried to encourage students to look for information that is suitable for problems and answers as problem solving. This can be done by carryingout experiments or experiments by looking for solutions or answers that are part of problem solving. Teachers also need to monitor the course of discussions between students so that it will be known whoparticipates in discussions in solving problems and will also be known how the discussion activities take place, it will even be seen which students are active and passive. When the teacher understands this, theteacher will be able to see the condition or level of understanding of each student.

Fourth, developing and presenting work. Mathematics subject teachers MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung have made efforts to assist students in planning and realizing results in accordance with the assigned tasks. The steps of *Problem Based Learning learning that* mathematics teachers in MI Darussa'adah carried out by guiding students to prepare the results of the problem solving processthat has been carried out then formed in a report. The results of this report will later be given to the teacher, it can be in the form of documentation, recordings or other report products. Next, students present randomly from each group to convey the results of solving problem-based problems in front ofthe class or stand in the circle of their respective groups.

Fifth, analyze and evaluate the problem solving process. Mathematics subject teacher MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung has made efforts to help students reflect or evaluate the results of their research and the learning process carried out. The purpose of this reflectionand evaluation will be able to make an assessment or decision in further learning activities, especially inimproving learning activities so that they are getting better. In the process of learning mathematics in theclassroom, teachers end classroom learning with several steps, namely the delivery of conclusions andassessments, analysis, collection of results, closing, reflection, reminders, prayer and closing greetings.

Constraints or Obstacles to the Application of the *Problem Based Learning* Model (PBL) in Mathematics Subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung

The success of the application of *problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is influenced by several things, among others, the readiness of teachers in carrying out learning activities as well as the condition of students in participating in learning activities. However, in reality, the application of the *problem-based learning* model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung experienced several obstacles or obstacles. This is in line with previous research carried out by Krise Mulyadi and Nani Ratnaningsih (2015) who studied the analysis of achievements and obstacles to the implementation of PBL by finding that basically the implementation of Problem-Based Learning (PBL) was running optimally, all learning tools were prepared using planning is planned and good and requires sufficient time. Here are some things related to the obstacles or barriers found in the *problem-based learning* model in the mathematics subject of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung:

First, the lack of learning resources. Learning resources referred to here are learning resources related to media, objects, facts, ideas, and data that play a role in facilitating teaching and learning activities. In the application of the *problem-based learning* model in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, class teachers experience shortages in learning media as alearning resource. So far, teachers still use manual learning media, namely through sheets of paper givenafter the lesson is opened. Mathematics teachers of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung sometimes also still feel lacking in terms of readiness of interesting ideas in making

various problems related to a problem in everyday life.

Second, the lack of literacy skills of students at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is fairly slow in terms of literacy, especially in processing thinking power to solve problems in the application of *problem-based learning* models in mathematics subjects. This lack of student literacy skills has an impact on the slow ability to understand a text related to personal experience, think critically and efforts in processing communication skills that are intertwined more creatively in activities to understand problems, respond to problems, and solve problems in mathematics subjects.

Third, limited time. Limited time in teaching and learning activities is also part of what hinders the implementation of the success of educational goals through the application of *problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung. Each series of stages in this implementation needs to be done more optimally with a comfortable, relaxed, and unhurried atmosphere. The small time limit sometimes makes it difficult for students to think about solving problems. Time efficiency also requires teachers to be able to carry out all stages but with urgenttime so that other stages become less than optimal to be conveyed and examined with students.

Benefits of the Applications of the *Problem Based Learning Model* (PBL) in Mathematics Subjects at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung

In line with the explanation of the research findings on the obstacles of the problem-based learning model that have been applied to the mathematics subjects of MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung, there are also some benefits of the problem-based learning model that have been applied so as to improve the quality and quantity of learning ctivities. The following are some ofthe benefits found in the application of *problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung which can provide a stimulus or source of strength in learning activities:

First, increasing students' skills in problem solving in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung. Students will be able to improve critical thinking skills inthe discussion and problem solving stages. Students are able to foster initiative in work as well as internal motivation to learn, so as to develop interpersonal relationships in group work.

Second, it is easier to remember the learning material that has been learned in the mathematicssubject MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung. Students will have learning skillsso as to motivate students to develop higher order thinking skills. Students will also be more interestedin exploring the material and even motivated to learn in other subjects or in the application in everydaylife.

Third, increasing students' understanding of the material by achieving meaningful learning. Students learn to solve a problem so that students will apply the knowledge they have or try to find outthe necessary knowledge. In connection with everyday life, through the application of *problem-based learning* models in mathematics subjects MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung is intended so that students are able to learn to know the various problems that exist in everyday life as wellas learning to solve problems. Students' understanding of learning materials is likely to be applied in everyday life.

Fourth, improving their skills that are relevant to the practical world, making students independent and free learners. Students will be able to explore themselves to think creatively and innovatively according to the learning experience that has been done. The independence and freedom ofstudents in learning activities cannot be directly implemented, so in this case the role of group work which is part of the stages of applying the *problem-based learning* model in mathematics subjects MI

Darussa'adahDomasan Kec. Kalidawir Kab. Tulungagung as a means of training students to be able to face problemsthat are relevant to everyday life.

Fifth, building leadership and cooperation, as well as solving problems can help students to develop their new knowledge and take responsibility for their learning, and can also encourage them toself-evaluate both learning outcomes and learning processes. Students' personalities will also be formed indirectly to be more responsible in addressing various problems in everyday life. Students will also betrained to be able to evaluate and improve various things that have been done so that it is likely that students will increasingly be prepared with various things related to everyday life.

CONCLUSIONS

Mathematics teachers at MI Darussa'adah Domasan Kec. Kalidawir Kab. Tulungagung have implemented a *problem-based* learning model with several steps that are in accordance with the PBL series in a structured and systematic manner as stated by Arends, namely, introducing students to a problem study, organizing students in teaching and learning activities, guiding individual and group investigations, developing and presenting work, and analyzing and evaluating the problem-solving process. Some of theobstacles encountered in the implementation include lack of learning resources, lack of student literacy skills, and limited time. While some of the benefits encountered include increasing students' skills inproblem solving, students more easily remember the learning material that has been learned, increasingstudents' understanding of the material with the achievement of meaningful learning, increasing their abilities that are relevant to the practical world, making students independent and free learners, and building leadership and cooperation, and solving problems can help students to develop new knowledgeand take responsibility for learning. Future researchers can carry out development research in the context of applying problem-based learning models to mathematics subjects, both studies in terms of developing learning models and more relevant mathematics lessons in finding solutions to the various obstacles encountered.

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