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Implementation of LKPD based on problems assisted by edmodo application to improve student learning motivation in class V students of SDN 19 Nan Sabaris

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Abstract. Science is one of the compulsory subjects at the elementary school level. Science learning is currently not able to motivate students to be active in learning, and this can be observed at SDN 19 Nan Sabaris. This study aims to see the effect of using problem-based LKPD with the help of applications to improve science learning motivation of fifth grade students of SDN 19 Nan Sabaris. This type of research is quasi-experimental, with a sample of fifth grade students at SDN 19 Nan Sabari, Padang Pariaman Regency. The instrument of data collection in the study was a motivational questionnaire. The data analysis technique uses the t test with the type of paired sample t-test. The results of the data analysis showed the value of sig 2. Tailed for 0.0025 smaller than the alpha value = 0.05, and it can be concluded that there is a significant difference in science learning motivation between before and after the use of problem-based LKPD**.**

1. Introduction

Natural science is one branch of science whose focus of study is nature, natural phenomena and the processes involved. Science learning in elementary schools is expected to be a vehicle for students to learn more about themselves and their surroundings, and the prospects for further development and can be applied in daily life. Science is related to how to find out about nature systematically, so that science is not only mastering a collection of knowledge in the form of facts, concepts, or principles, but also a process of discovery[1]. Science is one of the main subjects in the education curriculum in Indonesia, including at the elementary school level. Natural Sciences is a human effort in understanding the universe through proper observations of targets, and using procedures, and explained with reasoning so as to get a conclusion [2].

The 2013 curriculum which is set at the elementary school level emphasizes thematic learning. Thematic learning is integrated learning that uses themes to link several subjects so as to provide meaningful experiences to students. Thematic learning emphasizes more on the involvement of students in the learning process actively in the learning process, so that students can gain hands-on experience and be trained to be able to discover for themselves the various knowledge they learn. Through direct experience learners will understand the concepts they learn and relate them to other concepts they have understood.

The application of thematic learning at the elementary level is one way to improve students' reasoning and thinking. Reasoning is the process of thinking done in a way to draw conclusions. General conclusions can be drawn from individual cases. Reasoning is conducting an experiment in the mind with the results at each step in the sequence of experiments that have been known by reasoners from the experience. With the ability to reason possessed by students it will increase the activities of students in building their knowledge. So students are able to compete and keep up with current technological developments.

The purpose of primary education is to establish the basic personality of student as whole Indonesian persons based on the level of development; development of basic understanding of science and technology, a foundation for learning in higher education and public life [3]. One way to build students' knowledge is by focusing learning on students (student centers), where students are highly required to be active in finding various learning resources. Learning resources that can be used not only from books used at school, but students can also use internet technology to obtain additional information.

Limitations that are owned by several schools cause students not to get much information in learning. SDN 19 Nan Sabaris is one of the schools that has these limitations. The learning that is taking place today is dominated by the lecture method. The dominance of the use of the lecture method is inseparable from the concept of the method which is practical and does not require a long preparation before the implementation of learning [4]. In learning by the lecture method, students only get information from the teacher, so learning is still dominated by the teacher. This has become one of the reasons students are less able to build their own knowledge and students become bored and less motivated in learning which results in low learning outcomes.

Overcoming the problems that occur then one way is to compile a teaching material. Teaching materials that are made can be modules, worksheets, photos, videos, etc. To improve students' reasoning ability, one of the teaching materials that can be used is a problem-based module. The problems presented in the module are contextual and familiar problems that surround students. Problem-based learning is a learning model that refers to constructivist learning theory. In the constructivist view, learning is the process of forming knowledge. Knowledge is not something that has been determined, but rather a process of formation.

The use of technology in learning with the aim of increasing students' learning motivation. Edmodo is one application that can be used in learning both at school and at home. This application can be downloaded for free and can be used on smartphones or on computers so that the use of Edmodo is more practical and efficient. One of the advantages of the Edmodo application compared to other similar applications is that Edmodo is compatible on all smartphones.

Based on the problems found in SDN 19 Nan Sabaris, a study was conducted to look at the effect of using a problem-based module with the help of Edmodo to increase the activeness of students in learning science in class V.

2. Literature Review

2.1. Problem Based Learning

Problem-based learning (PBL) is a learning model designed in the process of solving problems faced scientifically so that students get important knowledge. Thus students are expected to be proficient in solving problems, have their own learning models and have the ability to participate in teams. PBL should meet complex, open and authentic criteria. PBL was one of the innovative learning models that could provided conditions for active and creative students [5].

PBL model is a learning model that uses real world problems. The problem is used as a context for students to learn critical thinking and problem solving skills, as well as to obtain essential knowledge and concepts from the subject matter. One way to improve students' literacy skills is to use problem-based learning methods. PBL strategy (problem-based learning) is learning with a constructivism approach so that students form their own knowledge, develop higher skills and increase self-confidence [6].

PBL is a learning approach that begins with confronting students with problems. With all the knowledge and abilities possessed by students, they are required to solve problems that are rich in concepts. The characteristics of PBL include: 1) positioning students as self-directed problem solvers through collaborative activities, 2) encouraging students to be able to find problems and elaborate them by submitting guesses and planning solutions, 3) facilitating students to explore various alternative solutions and their implications, as well as gathering and distributing information, 4) training students to skillfully present findings, and 5) accustoming students to reflect on the effectiveness of their ways of thinking in solving problems.

2.2. Science in Elementary School

Science can literally be called the science of nature or which studies events that occur in nature. Natural Sciences are subjects related to knowing nature systematically [7]. Learning objectives and the nature of science, that science can be seen as a product, process and attitude, then in learning science in elementary school must contain the 3 dimensions of science. Science learning not only teaches mastery of facts, concepts and principles about nature but also teaches methods of solving problems, practicing critical thinking skills and drawing conclusions to train to be objective, work together and respect the opinions of others. The science learning model that is suitable for elementary school age children is a learning model that adjusts the learning situation of students with real life situations in the community. Students are given the opportunity to use existing learning tools and media in their environment and apply them in their daily lives.

Science as one of the subjects in school, can provide a role and experience for students. The results of science learning can be greatly influenced by the motivation of students. Whether it's internal motivation or external motivation. Science learning is carried out with various efforts, one of which is through increased learning motivation. In terms of student learning will succeed if in itself there is a willingness to learn and the desire or encouragement to learn, because with increased learning motivation students will be moved, directed towards the attitude and behavior of students in learning, in this case learning Natural Sciences.

2.3. Edmodo

Edmodo is a social media platform that is often described as Facebook for schools and can function even more as needed [8]. In addition to involving teachers and students, the social media which was founded by Nicolas Borg and Jeff O'Hara also involved parents of students to communicate with each other. Now Edmodo has grown rapidly and has around 7 million accounts.

Edmodo facilitates e-learning so learning can be done in various places. Edmodo also helps teachers who cannot teach in class by providing learning material online by uploading learning material. The teacher can give assignments that can be determined at the time of collection following assessment. Some things that can be done through Edmodo for example: Communicate, not only with students and parents but with fellow teachers in various parts of the world, discussing, sharing teaching materials, giving assignments, collecting assignments, conducting assessments.

In supporting the learning process, Edmodo is equipped with several learning activities. For teaching materials, Edmodo support teaching materials in the form of files and links [9]. The features available on edmodo are Group, Note, Alert, Assigment, Quiz, Polling, Library, Progress, Edmodo Planner [10].

2.4. *Motivation to Learn*

The word motivation comes from the word "motive", which means the reason for doing something, a force that causes someone to move to do an activity. In the Big Indonesian Dictionary, motivation is defined as a drive that arises in a person consciously or unconsciously to carry out an action with a specific purpose. Clarifies the importance of students' learning motivation or motivation in learning, namely that learning must be motivated in various ways so that the interests that are prioritized in learning are built from existing interests in themselves child.

Motivation to learn is the tendency of natural learners to conduct learning activities that are driven by a desire to achieve the best possible learning achievements or results [11]. Providing motivation to students means moving students to do something or want to do something. Therefore it is important to create certain conditions so that students are always motivated and want to continue learning. Looking at the situations and conditions, then a creative teacher must be able to increase students' learning motivation in learning by creating a learning media that can help students to be more motivated in learning.

3. Research Methods

This type of research is quasi-experimental. The study was conducted at SDN 19 Nan Sabaris. The population of this study was all students of SDN 19 Nan Sabaris registered in the 2018/2019 school year. This research was conducted in April to May 2019. The sample of this research was 21 students of class V of SDN 19 Nan Sabaris. The research instrument used in data collection was a student learning motivation evaluation questionnaire. Data analysis using paired sample t-test with the prerequisite data requirements must be normally distributed and homogeneous. The use of paired sample tests is because sample classes are only available in 1 class and analysis is done by comparing data before and after treatment is given. Conclusions are drawn based on the results of data analysis. The research hypothesis is as follows:

Ho: There is no significant difference in students' motivation to learn science between before and after being treated using problem-based LKPD

Hi: There are significant differences in students' motivation to learn science between before and after being treated using problem-based LKPD

Information:

Accept Ho if the value of sig is 2.tailed>$\alpha = 0.05$

Reject Ho if sig value 2. Tailed <$\alpha = 0.05$

4. Result and Discussion

This research is motivated by the low motivation to learn students in learning science in class V SDN 19 Nan Sabaris. To increase motivation teachers can use problem-based student worksheet with the help of the Edmodo application to stimulate student knowledge. The data collected in this study relates to the results of student questionnaire analysis before and after using a problem-based student worksheet with the help of the Edmodo application. To test the research hypothesis using a statistical analysis with the paired sample t-test equation (two average similarity test) requires the completion of a prerequisite test. The prerequisite test in question is that the two groups of data must be normally distributed and homogeneous. The following presents the results of the normality test analysis for two groups of sample class data just before the use of student worksheet products and after the implementation of student worksheet products in learning activities. Conclusion data from the results of the normality test analysis of the data groups before treatment are presented in Table 1.

Table 1. Data on Normality Test Results Before Treatment

One-Sample Kolmogorov-Smirnov Test

N		21
Normal Parameters[a]	Mean	52.7381
	Std. Deviation	8.80003
Most Extreme Differences	Absolute	.146
	Positive	.146
	Negative	-.104
Kolmogorov-Smirnov Z		.669
Asymp. Sig. (2-tailed)		.762

a. Test distribution is Normal.

Based on the data shown in table 1, it can be concluded that the data group before treatment can be said to be normally distributed after testing using the Kolmogorov-Smirnov equation. Data is said to be normally distributed if the sig 2. Tailed value shown is greater than the α value of 0.05. If the first data set is normally distributed, it means that the data analysis process can proceed to the next stage. Data from the analysis of the normality test for the data group after treatment is given is presented in Table 2.

Table 2. Data from the Normality Test After Treatment

One-Sample Kolmogorov-Smirnov Test

N		21
Normal Parameters[a]	Mean	74.2857
	Std. Deviation	8.37193
Most Extreme Differences	Absolute	.180
	Positive	.180
	Negative	-.138
Kolmogorov-Smirnov Z		.826
Asymp. Sig. (2-tailed)		.502
a. Test distribution is Normal.		

Based on the data shown in Table 2, it can be concluded that the data group before treatment can be said to be normally distributed after testing using the Kolmogorov-Smirnov equation. Data is said to be normally distributed if the value of sig 2. Tailed (0.502) shown is greater than the α value of 0.05. The first data pre-test was fulfilled, that is, the two data groups were normally distributed. Then the homogeneity test of the two groups of data is performed and the results of the analysis are presented in Table 3.

Table 3. Data on Homogeneity Test Results for the Two Groups of Research Data

Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
.045	1	40	.833

Based on the data shown in Table 3, it can be concluded that the data groups before treatment and after treatment are homogeneous. Data is said to be homogeneous if the sig 2. Tailed value shown is greater than the α value of 0.05. If all of the requirements have been fulfilled, the final stage carried out in this study is to test the effectiveness of LKPD by using the equation of the similarity test of two paired sample t-test averages. The results of the paired sample t-test test analysis are shown in Table 4.

Table 4. Test Result Data Analysis Using Paired Sample t-test

No	Variabel	Result
1	Mean	2.15476E1
2	Standard deviation	8.08069
3	t	-12.2
4	df	20
5	Sig 2 tailed	0.0000

Referring to the results of the analysis of the product effectiveness test using the similarity test of two types of paired sample t-test, it can be concluded that the use of student worksheet that has been developed is statistically proven to increase students' motivation to learn science. This conclusion was drawn by comparing the sig 2 tailed value with an α value of 0.05.

5. Discussion

The application of problem-based student worksheet in learning science can directly involve all students in learning activities. This can be observed during research activities. The application of problem-based student worksheet provides the opportunity for all students to be active in learning by involving practicum activities provided by the teacher. Learning directed in the concept of the problem-based student worksheet is learning which requires the involvement of all students to find solutions to problems by utilizing practical tools and materials provided by the teacher to answer the problem.

Student motivation also increases because of the role of the application of technology coupled in creating active learning concepts and having prior knowledge before implementing learning. Technology-based learning was developed to increase knowledge and participate in carrying out learning in accordance with the principles of constructivism learning. [12, 13]

Today, technology in the learning process can be applied in various media, one of which is mobile telephone. Cellular technology, such as smart phones, tablets and other handheld devices, has functions and applications that are getting stronger. They become friends everywhere who accompany people through their daily events. They are often used for a number of purposes, which include sharing events through multimedia, interacting through social networks. They change what nature, where, and how we learn. Technology-based learning has terms such as' mobile learning. Learning is meant is the media with the ability to learn anywhere, anytime and in any way. The Cellular Pedagogical Framework explains how the specific characteristics of cellular devices can be exploited in learning [14, 15].

Edmodo has a role in increasing students' initial understanding of the material to be taught. Students in groups can access all of the initial material that is useful later in helping students solve problems raised in science learning using problem-based student worksheet. Edmodo as a teaching tool that inspires knowledge to be built. It was described by as an interactive platform based on social networking and mutual collaboration between teachers and their students [16].

Edmodo is one of the technological applications designed to help teachers and students to be able to connect wherever and whenever. Edmodo can be one of the solutions so that distance learning can be carried out and students can freely access the information not only limited to smartphones but also available on computer devices. Edmodo also allows teachers to monitor who students have participated in downloading information.

For elementary school level, edmodo is used as a learning stimulus and as a substitute for digital libraries where in the past research activities material, pictures and videos are inserted that can increase student interest and motivation to learn. Stages of learning using edmodo-aided problem-based student worksheets include:students collect independent study assignments in groups using the edmodo application, the teacher introduces the problem and packaging it in the form of a game, The teacher asks students to think about how to win the game (solving problems), Students discuss the results of their answers in front of the class. In the other hand, Edmodo provides a safe space for teachers to interact and connect with thousands of educators in the same subject area. When a teacher joins an online community, the teacher builds a professional learning network [17].

The advantages of the products that have been developed include:can increase student motivation, make it easier for teachers to prepare subject matter, accustom students to follow problem-based learning patterns, introduce the application of technology to students from an early age, minimize time, in accordance with the principles of learning in elementary school [18].

Some of the obstacles and shortcomings that were found during the research activities using edmodo-aided problem-based student worksheets product include: difficult to apply to students with low abilities, must be supported by complete facilities and infrastructure, must rely on internet connections when using edmodo.

6. Conclusion

The use of problem-based student worksheet in learning science in edmodo-assisted elementary school is proven to be able to increase learning motivation of fifth grade students of SDN 19 Nan Sabaris. Increased motivation is driven by the necessity in learning activities where students are active and the

teacher as a facilitator. In the application of edmodo-assisted problem-based student worksheet, teachers need to pay attention to the availability of internet networks and understanding of edmodo applications. In addition, teachers also need to provide direction for students to formulate hypotheses and problem solving. This problem-based student worksheet can be applied in other subjects such as social studies, PKN, ARTS with regard to the characteristics of developing teaching materials and technological concepts.

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