

The Effect of Problem Based Learning Model Assisted by Color Journey Learning Media on Social Arithmetic Material on Students' Learning Motivation

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ABSTRACT

This research was conducted with the aim of determining the influence of learning motivation of class VII students at SMP Al - Furqon before and after implementing the problem based learning model. The research method used was pre-experimental design with a one-group pretest-posttest design and used a quantitative research approach. . The subject of this research was class VII A of Al-Furqon Middle School. The research instruments used were pre-questionnaires and post-questionnaires as well as test results as supporting data. The questionnaire instrument is in the form of statements regarding pre-questionnaire and post-questionnaire learning motivation to measure students' learning motivation before and after implementing the problem based learning model assisted by ethnomathematics learning media which is supported by student test results. The data analysis technique used is hypothesis testing. However, before carrying out a hypothesis test, the data obtained must first be tested for normality. Based on the calculation of the paired sample t test using IBM statistics 29 which shows that the significance value is 0.001. The significance value shows $0.001 < 0.05$ error level, so it can be concluded that H_a is accepted. Acceptance of this H_a means that there is an influence of the problem based learning model assisted by ethnomathematics learning media on social arithmetic material on students' learning motivation.

Keywords : Problem based learning; Learning media; Social arithmetic; Learning motivation.

INTRODUCTION

Education is a human need that is always changing, developing and increasing in accordance with developments in all fields of life. One of the most important lessons in education is Mathematics (Kurniawan & Fitriani, 2020). mathematics is one of the main subjects at the basic education level, up to upper secondary education which aims to equip students with higher order thinking skills (HOTS). (Kamarullah, 2017).

The position of mathematics subjects, especially in social arithmetic material, as a lesson that has little absorption and is considered difficult by students (Bela et.al., 2021). Ana & Nusantara (2019) also said that students have difficulty in understanding problems, transforming problems, and performing arithmetic operations caused by several factors. One way that teachers can realize success in learning activities is by choosing a learning model that suits the learning material so that teachers can train students to be independent and able to think creatively in learning activities (Handayani & Koeswanti, 2021). To overcome this difficulty, the research utilized the Problem Based Learning model.

The problem-based learning model is a learner-centered learning strategy that develops active learning, problem-solving skills and field knowledge, and is based on understanding and solving problems (Hamdiah Ahmar et.al., 2020). The application of the PBL model has a positive effect on students who can increase interest in learning, problem solving skills, learning motivation, critical thinking, and student learning outcomes (Meilasari et.al., 2020). The characteristics of the Problem Based Learning learning model are a learning model that emphasizes solving problems previously given by the

teacher in the form of questions, so that in this case students are required to be active in the aspect of their knowledge based on their abilities and knowledge sought from various sources that support this (Dewi et.al., 2020), From this description, it can be concluded that the problem-based learning model is a learning strategy with problem-solving characteristics that has a positive effect on increasing interest in learning. In addition, learning media is also considered to increase students' learning motivation by enriching their learning experience (Setyo et.al., 2020).

Learning motivation is one of the factors that influence the success of students who function as a driving force for achieving good results (Rahman, 2022). Learning motivation is influenced by internal and external factors, the role of teachers in motivating students is very important (Emda, 2018). To motivate students, teachers have several ways such as delivering material so that it is easy to understand, managing the class, understanding the character of students and learning objectives can be achieved, increasing student motivation by not only transferring knowledge, but by innovating each learning subject (Atik Bariyah et.al., 2023), From this description it can be concluded that learning motivation arises through internal and external factors, one of the factors is teacher innovation in learning and efforts to increase students' interest and motivation to learn can be used methods and innovative learning media that are good and correct and interesting. Through various learning methods and media, learning will be able to interact actively by utilizing all the potential of students, of course the media used in the process and to achieve educational goals (Febrita & Ulfah, 2019)

the importance of learning media in increasing students' interest and motivation in learning to support the activeness of students in participating in learning in class with the use of learning media students will be more active, innovative and creative (Ndraha & Harefa, 2023). Based on this, researchers use learning media in the form of Flashcards containing social arithmetic problems, packaged in the form of games on a color board, to increase students' motivation in understanding the concept.

The problem formulated is about the effect of problem-based learning (PBL) model supported by learning media on students' learning motivation. The purpose of this study is to investigate and understand the impact of the application of the PBL Model assisted by color journey learning media on students' learning motivation.

METHOD

This research uses quantitative methods which according to Laure (2022) Quantitative method is a research method that uses a lot of numbers. Starting from the data collection process to its interpretation. This research design uses one group pretest and posttest because researchers are looking for influences on the dependent variable whose results are not solely influenced by the independent variable due to the absence of control variables. Data collection in this study through pre and post questionnaires, namely by comparing the motivation of students before and after being given treatment in learning and supported by the results of tests that have been given to the treatment so that the results can be known more accurately. The research pattern is:

Tabel 1. *One Group Pre Test – Post Test Design*

Group	Pre angket	Treatment	Post angket
Experiment	σ_1	x	σ_2

σ_1 = Pre questionnaire score (before treatment)

x = Treatment of problem-based learning model to students

σ_2 = Post questionnaire score (after treatment)

Researchers will use 2 variables, namely the independent variable (independent variable) and the dependent variable (dependent variable). The independent variable in this study is the Problem Based Learning learning model assisted by color journey learning media (X) and the dependent variable in this study is student learning motivation (Y). This uses a one group pre test post test design, which is to find the relationship between X and Y.

The population in this study were 7th grade students of SMP MQ Al-Furqon Tebuireng with a sample of Class 7B students of SMP MQ Al-Furqon Tebuireng totaling 32 students. The sampling technique used was Purposive Sampling. Purposive sampling is a sampling technique with certain considerations (Sugiyono, 2019). Researchers use sample techniques taken from comparable and pre-formed classes, so that researchers do not change the existing class order.

The research design of one group pretest and posttest design is measured by using questionnaires, namely pre questionnaires conducted before treatment and post questionnaires conducted after treatment.

This data collection technique uses pre questionnaires, observations and tests. The research

instruments used were questionnaires, observation sheets and tests. The data analysis technique in this study uses an instrument validity test validated by two expert experts, a reliability test with the help of the 2019 microsoft office excell application with the Cronbach alpha formula. According to Sudijono (2013), A test is said to be reliable if its reliability is greater than or equal to 0.60. So if the instrument reliability coefficient is less than 0.60. then the instrument is reliable ($ri \geq 0.60$), and using the effectiveness test, namely the normality test and hypothesis testing with the help of IBM SPSS Statistic 21.

Based on this and the phenomena that have occurred in the field, the hypotheses proposed are

- a) H_0 = the problem-based learning model assisted by color journey learning media has no effect on student learning motivation on the material of rows and series
- b) H_a = problem-based learning model assisted by color journey learning media affects the learning motivation of students on the material of rows and series,

The hypothesis test used is the questionnaire results with a significance < 0.05 significant level, then H_a can be accepted. If the questionnaire results with significance > 0.05 then H_a is rejected

RESULT AND DISCUSSION

This research was conducted from February 24, 2023 to June 4, 2023. Focusing on class 7B students at Al-Furqon MQ Tebuireng Jombang Junior High School as many as 32 students. The purpose of the study was to observe the effect of the problem-based learning (PBL) model assisted by Color journey Learning Media on students' learning motivation in understanding social arithmetic material. researchers began with the stages of submitting titles, making learning media, preparing learning devices, and validating devices and instruments The material tested was social arithmetic. The teaching module used is with a problem-based learning model and learning media molor journey.

Result

This study was conducted to determine the learning motivation of students in understanding and working on problems in social arithmetic material. In this regard, researchers use a problem-based learning model assisted with learning media to determine the motivation of students in learning mathematics on social arithmetic material. Before conducting research, researchers conducted observations in the form of interviews with subject teachers on the problems faced at school on social arithmetic material, based on this, researchers will use a problem-based learning model assisted by learning media in motivating students to be actively involved in the learning process so that teaching and learning activities become more interactive and students can understand the concept of social arithmetic directly through learning media.

The instruments used in this study are learning motivation questionnaires, test instruments and observation sheets that have been validated by two experts, namely mathematics education lecturers and subject teachers. the validity of the teaching module is declared very valid (78.57%) for use in learning activities. The attached observation sheet shows that the research has been carried out in accordance with the prepared module. The instruments used are learning motivation questionnaires, test instruments, and observation sheets that have been validated by mathematics education experts and subject teachers with a very good percentage of validity. The learning motivation questionnaire consists of pre and post questionnaires with a validity percentage of 82.22% and reliable. Respondent data showed a significant increase from pre to post questionnaire.

The third instrument is a written test contained in the learning media, which has also been validated and considered very valid with an average of 81.67%. This test was designed as a support for this research to solve everyday problems in understanding the concept of social arithmetic.

In addition, researchers conducted observations and interviews with subject teachers to find out the problems faced at school related to social arithmetic material. Based on the results of these observations, the problem-based learning model assisted by learning media was chosen to increase student motivation. During the implementation of learning, students showed high enthusiasm and involvement in learning activities using the learning media. They were involved in discussions and tried to understand the problems presented. Positive responses were also seen in the learning motivation questionnaire.

This study aims to measure students' learning motivation towards understanding and working on social arithmetic problems. problem-based learning model with the help of learning media is used to strengthen students' motivation in understanding the material. Learners show interest in understanding everyday math concepts through this learning model.

Contextual statements in the learning motivation questionnaire as many as 20 items pre and post questionnaire, used to measure the impact of learning on students' learning motivation in social arithmetic material. This study includes conventional teaching before the implementation of PBL to compare its effect on learners' learning motivation.

Discussion

The learning process was carried out for two meetings with an allocation of 2x40 minutes per meeting. Learning is divided into two phases, where the first meeting is conducted without the help of learning media, while the second meeting uses a problem-based learning model supported by learning media.



Figure 1. First meeting



Figure 1 Second meeting

The data to be tested for two paired samples must be normally distributed. Based on the results obtained using IBM SPSS Statistics 29, the significance value of the pre questionnaire is $0.287 > 0.05$ and the significance value of the post questionnaire is $0.607 > 0.05$.

Table 1 Normality test

	Shapiro-wilk		
	Statistic	Df	Sig.
Pre angket	.972	32	.548
Post angket	.974	32	.607

from these data it can be stated that the pre questionnaire and post questionnaire are normally distributed in accordance with the criteria for detecting normality using the shapiro-wilk test. then the data was carried out a t test of two paired samples using the IBM SPSS Statistics 29 application to test the hypothesis proposed and obtained a significance value of 0.001. Where the significance value < 0.05 then H_a is accepted and can be seen in table 2

Table 2. T Test

Paired Differences							
Mean	Std. Deviation	Std. Error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
			Lower	Upper			
-14,500	7,139	1,262	-17,074	-11,926	-11,489	31	.000

This means that there is an effect of problem-based learning model assisted by color journey learning media on social arithmetic material on student learning motivation, this is in accordance with the results of research by (Subagja, 2023) learners can follow learning enthusiastically if triggered by something they like, in this case learning that begins with the use of learning game media can increase students' learning motivation and research from (Yulianti & Gunawan, 2019) The effectiveness of using the PBL model is more effective in improving students' concept understanding and critical thinking, indicated by the effect size value of understanding the concept of 0.36 and the effect size value of critical thinking of 0.66. In addition, based on the results of the manova test, both the significance value of understanding the concept and the

significance value are less than 0.005 so it can be concluded that there is an effect of applying the PBL model to the understanding of concepts and critical thinking of high school students.

CONCLUSIONS

Based on the results of the research and discussion in chapter IV, the conclusion that can be drawn is that there is a significant difference in the learning motivation of students of class VII Culture of Al-Furqan MQ Junior High School before and after applying the problem-based learning model. This is shown in the paired t test where the resulting significance value is 0.001, the value is smaller than the error rate used, namely 0.05, so that H_0 : there is an effect of problem-based learning model assisted by color journey learning media on students' learning motivation. The difference can be seen from the response of students in the post questionnaire is higher than the pre questionnaire and with the support of the test scores listed on the learning media.

Based on the results of this study, researchers suggest these things:

1. For teachers, teachers can use a variety of learning models that can encourage students to be actively involved and facilitate student understanding.
2. For further researchers, this research can be used as a reference for selecting learning models assisted by learning media to increase student motivation.

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