

## Analysis of the Impact of the Video Maker-Based PjBL Model on Motivation and Mathematics Learning Outcomes of Middle School Students: An Experimental Study

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*Article History: Received: Received: june,, 11, 2024; Accepted: june, 25 2024; Published: June 30, 2024*

### Abstract

The purpose of this study was to determine the impact of the Video Maker-Based PjBL Model on the Motivation and Learning Outcomes of Junior High School Mathematics Students. The role of Mathematics teachers in using the PjBL (Project Based Learning) Model based on the use of Video Maker shows the importance of real context according to the situation in the environment by students themselves in thinking deeply to identify problems in learning so that the concepts received by students are more meaningful. This research is in the form of a quantitative experiment with the research subjects of VIII grade students at SMPN 1 Gumukmas,. The main objective in this study is to improve students' Learning Motivation and Mathematics learning outcomes (cognitive) of students. The data in this study are quantitative data obtained from tests of students' knowledge and understanding through questionnaire tests. The results of the t test and F test of the success of this study show: (1) the effect of the PjBL (Project Based Learning) Model Based on the Use of Video Maker on increasing student Learning Motivation is 5.469, (2) the effect of the PjBL (Project Based Learning) Model Based on the Use of Video Maker on increasing student learning outcomes is 8.007, and (3) the effect of the PjBL (Project Based Learning) Model Based on the Use of Video Maker on increasing student Learning Motivation and student Learning Outcomes together is 9.471. This means that the application of the PjBL (Project Based Learning) Model Based on the Use of Video Maker in increasing students' Learning Motivation and Learning Outcomes has a significant effect.

Keyword.: Video Maker-Based PjBL, Motivation, Learning Outcomes



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### Introduction

Mathematics is one of the important subjects in junior high school education. However, many students find it difficult and are not interested in math. Teaching and learning activities at school are sometimes still considered as routine activities that are oriented towards mastering theory and memorization. This condition occurs in almost all fields of study, causing the results of the student learning process to be less than optimal. This includes the Mathematics learning process which is only fixated on memorizing formulas and theoretical

exercises, students without being taught to think about analyzing phenomena that occur in the community environment. (Setiawan & Royani, 2013; Suryani et al., 2020)

This kind of learning lacks innovation and variety in using learning activities and activities, so that the learning process becomes uninteresting and boring. The learning process of Mathematics, which is only lectures and practice problems, is considered to still lack experimental learning activities or the application of good methods, this of course has an impact on students' thinking pattern skills in learning to be less honed. From the obstacles in the learning process of Mathematics in the classroom, a learning model is needed which is the basis for driving revolutive and innovative changes in order to improve the learning outcomes of students' enthusiasm in learning. (Indiaswari & Katoningsih, 2023; Moma, 2015)

One of the learning strategies that can be used to improve motivation and learning outcomes in mathematics is Project Based Learning (PjBL). PjBL is a student-centered learning model that emphasizes the completion of meaningful projects or tasks (Dhaningtyas et al., 2021). This learning model can be integrated with video maker technology to create a more interesting and interactive learning experience for students, the implementation of a project-based learning model, which is an innovative learning model and focuses more on a contextual learning approach through complex activities (Jalinus et al., 2017; Nanda Rizky Fitriana Kanza, Albertus Djoko Lesmono, 2020)

Project-based learning through contextual learning will make students learn more thoroughly, both cognitively (thinking), affectively (thinking, heart, and taste) and psychomotorly (physical exercise). (Pratiwi et al., 2018). The strategy of the project-based learning model with a contextual approach followed by Video Maker is expected to provide more value and make it easier to understand project-based learning material followed by online media, and is useful in developing character building related to students' scientific attitudes. This project-based learning model also needs to work collaboratively with a group of friends. Investigation is carried out to solve the project problem. Students' knowledge construction is carried out independently which will eventually reach a peak when students produce real products. All learning experiences carried out are expected to hone aspects of character and thinking skills and practice by students. In the application of the project-based learning model in Mathematics, it is expected to make high motivation and enthusiasm for learning for students both individually and in learning groups. (Lutfi et al., 2018; Pratiwi et al., 2018)

Motivation to learn arises because of intrinsic factors, namely in the form of desire and desire to succeed and drive learning needs. Extrinsic factors include recognition of a conducive, comfortable and attractive learning environment. Learning motivation is essentially an internal and external drive in students with supporting indicators, it is this kind of drive that has an important role for one's success in learning (Hasni, 2019). ). It often happens that students who lack learning outcomes are not caused by their lack of ability, but because there is no motivation to learn so that students do not try to direct all their abilities. (Nurhayati et al., 2018)

The influence of fluctuating and uncertain motivation to learn Mathematics from students results in the acquisition of uncertain Mathematics learning outcomes as well, this is triggered due to the psychological / mental factors of each student in learning can be influenced by friends and the environment. Mathematics learning outcomes are the mastery

that a person or student has gained after the student absorbs the learning experience. According to (Yuliya, 2019), learning outcomes are a number of experiences obtained by students which include cognitive, affective, and psychomotor domains. The teaching and learning process carried out by teachers and students is not only mastery of the concept of lesson theory, but also mastery of habits, perceptions, pleasures, interests, talents, social adjustments, types of skills, ideals, desires, and expectations (Wilson, 2016).

Mathematics learning outcomes are a real picture of the success of teaching and learning in the classroom both delivered by the teacher and from the results of discussions. Through patterns of change, values, understanding, attitudes, and appreciation and skills. Learning activities are the most important activities. This means showing that the success or failure of achieving educational goals depends a lot on how students learn and the learning process experienced by students as students. (Hikmawati et al., 2013)

## **Fremwork**

### **Project-Based Learning**

Project-based learning model which is an innovative learning model and focuses more on contextual learning approach through complex activities. (Kanza et al., 2019). Project-based learning through contextual learning followed by the use of teaching videos (video maker) will make students learn more thoroughly, both cognitively (think), affective (feel) and psychomotor (exercise). The project-based learning model strategy with a contextual approach and online media is expected to provide more value for the development of character building related to students' scientific attitudes (Ilmiani et al., 2020).

This learning model also requires working collaboratively with a group of friends. Investigations are conducted to solve the project problem. Students' knowledge construction is done independently which will eventually reach a peak when students produce real products. All of these learning experiences are expected to hone the character aspects and scientific work skills of students. (Bekti Nurhamida, 2021)

The product in learning Mathematics is the result of a project in the form of goods or services in the form of designs, schemes, written works, works of art, technological works / workshops, and others. According to Logan et al and Mutakinati (Lanani, 2013) ) through the application of project-based learning, students will practice planning, carrying out activities according to plan and displaying or reporting the results of activities. As well as project-based learning, students can explore their knowledge with direct involvement in learning (Nanda Rizky Fitriani Kanza, Albertus Djoko Lesmono, 2020)

Through the application of the stages of completing the Mathematics work project, students are directed to analyze and identify problems based on the information obtained so that they can provide solutions to Mathematics problems. The PjBL (Project Based Learning) model followed by the use of Video Maker is also expected to encourage students' learning activities because it does not emphasize the acquisition of knowledge alone. Rather, it can develop students' thinking skills and ability to solve problems in the surrounding environment (Lutfi et al., 2018; Pratiwi et al., 2018)

### **Learning Motivation**

Education is an effort or activity that is carried out deliberately, regularly and planned with the intention of changing or developing the desired behavior. School as a formal educational institution is a means in order to achieve educational goals, as stated in (HALFFTER et al., 2003) ) about the purpose of National Education Chapter II Article 3. With this law, one of the main tasks of the school is to prepare students to achieve their optimal development. A student is said to have achieved optimal development if the student can obtain education and learning outcomes that are in accordance with their talents, abilities and interests. According to (Nurhayati et al., 2018) states that learning is a change in personality, which is manifested as new patterns of response in the form of skills, attitudes, habits, knowledge, and skills. Learning is a change in behavior that is obtained as a result of observing anything trying something or any other form of experience that can produce changes for individuals. Learning activities can be carried out anywhere in the school, community, and family environment, but in general, learning activities carried out are formal learning activities carried out at school (Hastuti et al., 2023; Marlina et al., 2021). The stages are usually students get material from the teacher while in the process there will be motivation that creates enthusiasm for learning from the teacher to students, the results of which are usually expressed in learning outcomes. (Husna & Sugito, 2021)

Learning motivation arises because of intrinsic factors, namely in the form of desire and desire to succeed and drive learning needs. The extrinsic factor is the recognition of a conducive, comfortable and interesting learning environment. Learning motivation is essentially an internal and external drive in students with supporting indicators. This kind of encouragement has an important role for one's success in learning (Hasni, 2019)

Likewise according to Wina Sanjaya (Sanjaya, 2015) said that the learning process motivation is one of the dynamic aspects that is very important. It often happens that students who lack learning outcomes are not caused by their lack of ability, but because there is no motivation to learn so that students do not try to direct all their abilities. Based on the results of observations made by researchers, the factors that influence low student learning motivation are the low ability of students to capture subject matter, student concentration in the classroom, student activeness in the classroom, student attitudes in the classroom, and student learning habits.. (Nurhayati et al., 2018)

Motivation to learn is an absolute requirement for learning and plays an important role in providing passion and enthusiasm for learning. According to (Susanto et al., 2022) says that learning motivation is a student's tendency to carry out learning activities that are driven by the desire to achieve the best possible achievements or learning results. Motivation to learn is encouragement in learning activities, so that motivation can be said to be the driving force within students which gives rise to learning activities so that the goals desired by the learning subject can be achieved." (Astria & Kusuma, 2023; Lin & Davidson-Shivers, 2005).

According to Hamalik (Hamalik, 2001) that based on a general analysis of motivation, motivation basically has two characteristics, namely intrinsic and extrinsic. Intrinsic motivation, often called "pure motivation", is the motivation included in the learning situation that comes from the student's own needs and goals. This motivation arises without any external influence. Meanwhile, extrinsic motivation is motivation caused by factors from outside the learning situation. This motivation is needed at school because not all learning at school can interest or suit the needs of students. According

to (Sanjaya, 2015) seen from the nature of motivation in general can be distinguished between intrinsic motivation and extrinsic motivation. Intrinsic motivation is motivation that arises from within the individual, while extrinsic motivation is motivation that comes from outside the self.

### Methodology

This study uses quantitative research methods in seeing the relationship of variables to the object under study, so that in this study there are independent / free (X) and dependent / bound (Y) variables. This research is an experimental research involving 2 class groups, namely the experiment class and the control class. By taking into account the variables involved and the objectives of the study, this study used the reference "Subject Random Design Pre\_Test Post\_Test Control Group" (Arikunto, 2011) The population in this study were children / students of class VIII at SMPN 1 Gumukmas - Jember, a total of 210 students Hypothesis testing was carried out using multiple linear regression analysis. To make it easier to analyze the data, all data processing will be done using the SPSS (Statistical Package for Social Science) program. (Sarmanu, 2017)

### Results and discussion

The normality level of a research variable can be seen from the results of the *One-Sample Kolmogorov-Smirnov Test* statistical test. The variable is said to be normal if the *Kolmogorov-Smirnov Test* value is  $> 0.05$ . The more the *Kolmogorov-Smirnov* value is close to one, the better the data normality value (well distributed). The results of the Normality test can be seen below:

Table 1. Results of Data Normality Test with *Kolmogorov-Smirnov Test*

no	variable	<i>Kolmogorov-Smirnov Test</i>	information
1	<i>PjBL (Project Based Learning)</i> Based on the use of Video Maker	0.200	Normal
2	Student's motivation to study	0.179	Normal
3	Student learning outcomes	0.200	Normal

### Homogeneity Test

The following are the results of the Homogeneity test of the questionnaire "The Effect of the *PjBL (Project Based Learning)* Model Based on the Use of Video Maker on Increasing Student Motivation and Learning Outcomes in Mathematics Subjects for Class VIII Students at SMPN 1 Gumukmas". The homogeneity level of a research variable can be seen from the statistical test results. The variable is said to be homogeneous if the Homogeneity value  $> 0.05$ . The more the value of the Homogeneity value approaches one, the better the data value (spread well). Homogeneity test results can be seen below.

Table 2: Results of Homogeneity Test of Research Data

no	variable	nilai <i>signifikansi</i>	keterangan
1	<i>PjBL (Project Based Learning)</i> Based on the use of Video Maker	0.377	Normal
2	Student's motivation to study	0,145	Normal

3	Student learning outcomes	0,437	Normal
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The results of data homogeneity appear with the acquisition of  $0.272 > 0.05$ , so it can be said that the data has a high level of homogeneity.

Table 3. Anova results of PjBL (Project Based Learning) Based Model Data The Use of Video Maker on Student Motivation and Learning Outcomes

**ANOVA<sup>a</sup>**

1	Regression	44.540	2	22.27	9.471	.000
	Residual					
	Total	1276.96	27	47.29		
		1321.50	29			

a. Dependent Variable: PjBL Model

b. Predictors: (Constant), Learning Outcomes, Learning Motivation

With the acquisition of the provisions of the results of  $0.000 < 0.08$  (significance that meets),  $F_{hitung} > F_{tabel} = 9.471 > 4.18$  (indicating that there is an influence of related variables), it is concluded that  $H_0$  is rejected and  $H_1$  is accepted with a percentage value of successful application of variables of 83.4%.

**Discussion**

The discussion of this research is to find out the "Analysis of the Impact of the Video Maker-Based PjBL Model on Motivation and Learning Outcomes of Junior High School Students in Mathematics: An Experimental Study ". With the learning process accompanied by Pre Test and Post Test activities in the classroom for students, it will certainly have a positive impact on schools and students. Positive impacts such as increased enthusiasm in student learning and low student inactivity in the learning process as has been proven in this study. With these conditions, schools must continue to pay attention to increasing student motivation and learning outcomes because if student motivation and learning outcomes are high, the school's vision and mission will be achieved to form smart and noble people.

The results of direct observation in the field show that Mathematics teachers often give advice to students who do not have a high interest in learning, by calling the room and asking students why they are doing so, it is also seen that other teachers are never angry at students who are not disciplined, they only ask why they are doing so, and provide input advice so that they do not do so, after that the teacher also asks about the benefits of applying the PjBL (Project Based Learning) Model Based on the Use of Video Maker during the learning process.

On the other hand, Mathematics teachers always provide motivation to be serious in learning and studying, multiplying provisions when young will later be useful to be devoted to both parents. Normally, it can be said that to improve the role of student learning motivation at SMPN 1 Gumukmas, there needs to be mutual cooperation with student guardians, and commitment between students in learning.

Improving learning outcomes according to the Mathematics teacher holds an important influence in improving students' cognitive learning outcomes, students who have low learning outcomes, because the Mathematics Guidance teacher plays a high role in solving student problems at school, one of which is by socializing and calling students who have problems directly.

The implementation of guidance services in improving learning outcomes is essentially to provide guidance to individuals or groups of individuals so that they can develop into independent and intelligent individuals. Guidance (additional hours of lessons) to improve learning outcomes helps individuals to become useful people in their lives who have various insights, views and interpretations, choices, adjustments and appropriate skills regarding themselves and their environment.

The challenge as a Mathematics teacher is never complaining about all the work he does, (Sari & Afriansyah, 2022) This is the role of the Mathematics teacher who likes to do his job rather than complaining even though it feels more difficult for other subject teachers but there is no word of giving up for the teacher, all of these are challenges that must be faced by everyone, and everyone is able to serve as well as possible. (Nurfitriyanti, 2016)

There are no words to complain or quit the job of a Mathematics teacher, because the work of a Mathematics teacher is difficult but must be carried out sincerely, let alone increase interest in learning to cognitive learning outcomes. The guidance provided by Mathematics teachers aims to help students to have the ability to internalize the values contained in their developmental tasks that they must master. (Amir Mahmud, 2016; Ningrum et al., 2021; Zagoto et al., 2019)

## **Conclusion**

Based on the research that the researchers have done, the results of the research on data collection. It can be obtained a total conclusion in outline that the same analysis results between starting the first research hypothesis to the third research hypothesis (H0) are rejected & in the second research hypothesis (H1) are accepted. The Acquisition of the Percentage of Success of the Effect of the PjBL (Project Based Learning) Model Based on the Use of Video Maker on Increasing Student Learning Motivation is 81.3% The Acquisition of the Percentage of Success of the Effect of the PjBL (Project Based Learning) Model Based on the Use of Video Maker on Increasing Student Learning Outcomes is 81.7% The Acquisition of the Percentage of Success of the Effect of the PjBL (Project Based Learning) Model Based on the Use of Video Maker on Increasing Student Motivation and Learning Outcomes is 83.4%.

Providing learning media in the learning process is an important aspect that determines learning success. Online learning media Video Maker is a method used by teachers to convey lessons to students. Because the delivery takes place in educational interaction, learning media can be interpreted as a tool used by the teacher in establishing relationships with students during teaching.

## **Advice**

Based on the results of this study, the researcher can provide some suggestions addressed to several parties for the sake of increasing students' interest in learning for the future as follows:

The teachers, so that they do not get bored of guiding, teaching and achieving creative, innovative and fun learning breakthroughs in order to implement a good and optimal learning process so as to bring out a better sense of student confidence.

Parents, should provide more space or time for their children to express themselves to support the development of children's interest in learning so that it can be even better. Furthermore, parents should be more active in monitoring and motivating their children to explore their potential and learning interests.

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