UJME 12 (3) 2023: 213-224
UNNES JOURNAL OF MATHEMATICS EDUCATION
https://journal.unnes.ac.id/sju/index.php/ujme/
ISSN: 2252-6927 (print); 2460-5840 (online)

The Effectiveness of the Liveworksheet Assisted Project Based Learning Model on Mathematical Literacy in View of Student Learning Motivation

Novi Triningsih[a,*], Amidi[a]

[a] *Departement of Mathematics, Universitas Negeri Semarang , Semarang City, 50229, Indonesia,*

** E-mail address:novitrieningsih@students.unnes.ac.id*

ARTICLE INFO

Article history:
Received 8 September 2023
Received in revised form 19 September 2023
Accepted 24 September 2023

Keywords:
Project Based Learning; Mathematical Literacy; Liveworksheet, Motivation to Learn

Abstract

The mathematical literacy of students at SMP Negeri 26 Semarang is not yet optimal. This research aims to determine learning mastery, average student mathematical literacy, the influence of learning motivation on mathematical literacy, and describe students' mathematical literacy in terms of learning motivation in class using a project based learning model assisted by live worksheets. This research used a mixed-method explanatory sequential design. The quantitative method in this research used a true experimental design with a posttest-only control group design involving two groups as an experimental group and a control group.The population of this study was class VIII of SMP Negeri 26 Semarang. The sample for this research was class VIII-G as the experimental class and class VIII-E as the control class taken using simple random sampling techniques. The subjects of this research consisted of 2 students in each category of high, medium and low learning motivation who were selected using purposive sampling technique. The results of this research show that: (1) students' mathematical literacy in Project Based Learning with Liveworksheet assistance has reached the actual completion limit; (2) the average mathematical literacy of students in Project Based Learning assisted by Liveworksheets is better than the average mathematical literacy of students in Problem Based Learning; (3) There is an influence of learning motivation on students' mathematical literacy with a percentage of 42.8%; (4) Subjects with high learning motivation have high mathematical literacy abilities because they tend to be able to fulfill the three indicators well. Subjects with moderate learning motivation have moderate mathematical literacy abilities, because there are still indicators that have not been met properly. Subjects with low learning motivation have low mathematical literacy abilities, because they do not fulfill the three indicators well.

1. Introduction

Education is a conscious and planned effort carried out by educators to develop students' potential and to achieve the goals of learning activities both inside and outside classroom. In the 21st century and the era of the industrial revolution 4.0, education has become an important element in ensuring students to have the skills to learn and innovate, as well as the skills to use technology and information media (Muliastrini, 2020). Education also plays a role in preparing qualified human resources who are competent in the development of technology and science.

One of the sciences that can support improving the quality of human resources is mathematics (Nitasari et al., 2018). Mathematics is one of the basic sciences that has an important role in everyday life and also in the development of science and technology. Mathematics learning is a process where students actively construct knowledge. Regulation of the Minister of National Education Number 20 based on Content Standards, it states that the purposes of learning mathematics in Indonesia are for students to have the ability

To cite this article:
Triningsih, N. & Amidi, A. (2024). The Effectiveness of the Liveworksheet Assisted Project Based Learning Model on Mathematical Literacy in View of Student Learning Motivation. *Unnes Journal of Mathematics Education*, *12*(3), 213-224. doi: 10.15294/ujme.v12i3.78880

to: (1) understand mathematical concepts, explain the interrelationships between concepts and apply concepts or logarithms, accurately, flexibly, efficiently, and precisely in solving problems, (2) using reasoning on patterns and properties, performing mathematical manipulations in making generalizations, compiling evidence, or explaining mathematical ideas and statements, (3) solving problems which include problem solving abilities, designing mathematical models, completing models and interpreting the solutions obtained , (4) communicating ideas with symbols, tables, diagrams, or other media to clarify situations or problems, and (5) having an attitude of appreciating the use of mathematics in life, namely having curiosity, concern, and interest in learning mathematics, as well as attitudes tenacious and confident in problem solving.

Based on the five goals of learning mathematics listed in Permendiknas Number 20, the goals of learning mathematics refer to aspects of mathematical literacy. Mathematical literacy is a combination of abilities that students must have (Roikhatul Jannah et al., 2021). Mathematical literacy is an individual's ability to be able to formulate, use, and interpret mathematics in various contexts, including the ability to reason mathematically and use concepts, procedures, and facts as tools to describe, explain, and predict a phenomenon or event (OECD, 2003). In understanding the use of mathematics in everyday life, mathematical literacy has an important role (Putra et al., 2016).

The importance of mathematical literacy is apparently not in line with the existing mathematical literacy in Indonesia. This can be seen from the results of the Program for International Students Assessment (PISA) survey conducted by the Organization for Economic Cooperation and Development (OECD) in 2018 which shows that the mathematical literacy of students in Indonesia is still below the international average score. Indonesia is ranked 72nd out of 78 participating countries with an average mathematics literacy score of 379, while the OECD average score is 487. Based on these scores, mathematics literacy in Indonesia is still relatively low.

The low mathematical literacy in Indonesia is caused by several factors, one of which is the learning model used (Mujib et al., 2020). According to Roikhatul Jannah et al., (2021) one learning model that can develop students' mathematical literacy is a project-based learning model. This is in line with Ayuningtyas & Dhewy's research (2018) which states that learning with a project-based learning model is suitable learning to improve literacy skills. Through the project based learning model, students not only learn in theory but students also learn practically in real life. Project-based learning provides opportunities for students to investigate real problems that allow them to acquire new knowledge (Serin, 2019). The Project Based Learning model or often abbreviated as PjBL, is a student-centered project-based learning model that places the teacher as an effective facilitator in contextual learning related to real life situations (Ratnasari et al., 2018).

Another factor that influences mathematical literacy is learning motivation. Fatchurrohman et al., (2022) stated that learning motivation has an important role in developing students' mathematical literacy. The higher the learning motivation, the higher the mathematical literacy ability (Faiqoh et al., 2020). Motivation to learn is a driving force from within and outside the individual to carry out a learning activity so as to foster a sense of enthusiasm for learning (Monika & Adman, 2017). Learning motivation that exists in every student can generate a mental urge to carry out learning activities so as to achieve the desired goals (Rahayu & Hartono, 2016). Student motivation in learning is influenced by several factors. According to Wiseman in Jannah & Sontani (2018), factors that can affect student motivation in learning include student aspirations or aspirations, student conditions, student abilities, environmental conditions, and dynamic elements in learning and teacher efforts in teaching students. Furthermore, one of the factors included in the dynamic elements of learning that can influence learning motivation is learning media (Widiyanti & Ansori, 2020).

Learning media is an important element in the learning process. One of the demands of learning in the 21st century is the integration of technology as a learning medium to improve student learning skills. There are many technologies that can be integrated into mathematics learning, one of which is liveworksheets. Referenced from the official website www.liveworksheets.com, liveworksheet is a website that allows anyone to convert printed worksheets in the form of word, pdf and others into online worksheets with self-correction. This interactive worksheet utilizes technology that can be applied in education in the form of sound, video, multiple choice, and even in the form of speaking exercises using a microphone. Using websites as learning media can increase students' mathematical literacy (Wardono & Mariani, 2019). According to Handayani et al. (2022), the use of liveworksheets can increase student involvement in learning and also motivate students when learning mathematics.

The preliminary study was conducted by interviewing one of the mathematics teachers at SMP Negeri 26 Semarang who revealed that the students' mathematical literacy was not optimal. Many students still have difficulty in understanding and solving contextual questions or problems. The teacher mentioned several factors that affect students' low literacy skills, one of which was the lack of interest and motivation

of students to learn mathematics. This could be seen from the number of students who tend to be passive during mathematics learning. In addition, the teacher revealed that learning models and media were also an important influence on students' mathematical literacy.

Based on the description above, the authors intend to conduct research by implementing project-based learning assisted by liveworksheets to improve students' mathematical literacy. Therefore, this research aims to determine the mastery of classical learning, the average of students' mathematical literacy, the influence of learning motivation on mathematical literacy, and to describe students' mathematical literacy in terms of learning motivation in class using a project based learning model assisted by liveworksheets.

2. Methods

The type of research used was mixed-method research or combination research. Mix-method is a research method that combines quantitative and qualitative methods in collecting, combining, and analyzing research data to obtain complete conclusions (Sugiyono, 2021: 523). Sequential explanatory design was the design used in this study. Sequential explanatory design is the design of a sequential combination method in which the quantitative method is carried out first and followed by the qualitative method (Sugiyono, 2021: 544). The quantitative method in this study was used to test mathematical literacy in the liveworksheet assisted project based learning model in terms of student learning motivation, while the qualitative method was used to describe mathematical literacy in the liveworksheet assisted project based learning model in terms of student learning motivation.

The quantitative method in this research used an experimental design with a true experimental design type with a posttest-only control group design. In true experimental design, sample and population selection were carried out randomly (random sampling) in both the experimental group and the control group. The experimental group was treated with a project based learning model assisted by liveworksheets while the control group was treated with a problem based learning model which was usually used by mathematics subject teachers. The posttest-only control group design can be seen in table 1.

Tabel 1.Posttest-Only Control Group Design

Group	Treatment	Posttest
Experiment	X	P_1
Control	Y	P_2

Information:
X: Treatment in the form of a project based learning model assisted by liveworksheets
Y: Treatment is in the form of a problem based learning model
P_1 : Results of the experimental group's mathematical literacy test
P_2 : Results of the control group's mathematical literacy test

The location of this research is SMP Negeri 26 Semarang which is located at Jl. Mpu Sendok II, Pudakpayung, Banyumanik District, Semarang City, Central Java. The population in this study was all class VIII SMP Negeri 26 Semarang. Sampling was done by simple random sampling technique. The sample in this study was taken by selecting two classes as an experimental group and a control group. There were two variables in this research, namely the dependent variable and the independent variable. The dependent variable in this research was students' mathematical literacy while the independent variable was students' learning motivation.

3. Results & Discussions

This research was conducted on May 15, 2023 to May 25, 2023 at SMP Negeri 26 Semarang. The implementation of learning was carried out in two sample classes, namely the experimental class and the control class. The experimental class was held in class VIII G, and the control class was held in class VIII E. The research was conducted for four meetings in the experimental and control classes.

3.1 Results

3.1.1 Quantitative data

3.1.1.1 One-sample mean test

One-sample means test was used to test whether the average results of students' mathematical literacy posstest after participating in learning with the PjBL model assisted by Liveworksheet on statistics material reached the Limit of Actual Completion (BTA) of 44.91. The hypothesis tested is as follows.

H_0: $\mu \leq 44.91$ (The average mathematical literacy test of students with PjBL learning model assisted by liveworksheet is less than 44.91)

H_1: $\mu > 44.91$ (The average mathematical literacy test of students with PjBL learning model assisted by liveworksheet is more than or equal to 44.91)

To test the one-sample average, the following formula is used.

$$t = \frac{\underline{x} - \mu_0}{\frac{s}{\sqrt{n}}} = \frac{64 - 44.91}{\frac{11.842}{\sqrt{32}}} = \frac{19.78}{2.087} = 9.53$$

Based on the calculation results obtained $t_{count} = 9.53 > t_{table} = 2.0395$, is rejected. That is, the average mathematical literacy test of students with PjBL learning model assisted by liveworksheet was more than 44.91.

3.1.1.2 Classical completeness test

The classical completeness test in this study was used to test the data of students' mathematical literacy test results after participating in learning with the PjBL model assisted by Liveworksheet on statistics material that had reached BTA, namely 44.91, whether it reached the proportion of 75% learning completeness. The proportion test used in this study was a one-party proportion test (right side). The hypothesis tested is as follows.

H_0: $\pi \leq 0.745$ (The proportion of students in the PjBL model learning assisted by Liveworkskeet did not achieve classical completeness on the mathematical literacy test.).

H_1: $\pi > 0.745$ (Proportion of students in PjBL model learning assisted by Liveworkskeet achieving classical completeness on mathematical literacy test)

To calculate the classical completeness, the following formula was used.

$$\mathrm{z} = \frac{\frac{x}{n} - \pi_0}{\sqrt{\frac{\pi_0(1-\pi_0)}{n}}} = \frac{\frac{30}{32} - 0.75}{\sqrt{\frac{0.75(1-0.75)}{32}}} = \frac{0.156}{0.07} = 2.02$$

Based on the results of the calculation, the value of $z_{count} = 2.02 > z_{table} = 0.45 = 0.6736$, so H_0 is rejected.

3.1.1.3 Two mean difference test

The two mean difference test was conducted to determine whether the means of the two samples were the same or different. The two mean difference test used the right party test with the following hypothetical.

H_0: $\mu_1 \leq \mu_2$ (The average mathematical literacy test of students in PjBL learning assisted by liveworksheet is less than or equal to the average mathematical literacy ability of students with PBL learning.)

H_1: $\mu_1 > \mu_2$ (The average test of students' mathematical literacy skills in PjBL learning assisted by liveworksheet is more than students' mathematical literacy skills with PBL learning.)

To calculate the difference between two means, the following formula is used.

$$t_{hitung} = \frac{\underline{x_1} - \underline{x_2}}{\mathrm{s}\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} = \frac{64 - 58.09}{13.22\sqrt{\frac{1}{32} + \frac{1}{32}}} = \frac{5.91}{3.305} = 1.788$$

Based on the calculation results, $t_{count} = 1.788$ dan $t_{table} = 1.699$ with dk=62 were obtained. Because $t_{count} > t_{table}$, then H_0 was rejected. That is, the average test of students' mathematical literacy skills in PjBL learning assisted by liveworksheet was more than the average test of students' mathematical literacy skills with PBL learning.

3.1.1.4 Test of difference of two proportions

The two-proportion t-test was used to determine whether the proportion of students who completed the math literacy test in the PjBL model assisted by liveworksheet was more than the proportion of students who completed the math literacy test in PBL learning. The hypothesis used is as follows.

$H_0 : \pi_1 \leq \pi_2$ (The proportion of students who complete the math literacy test in the PjBL model class assisted by Liveworksheet is less than or equal to that of the class with the PBL model)

$H_1 : \pi_1 > \pi_2$ (The proportion of students who completed the math literacy test in the PjBL model class assisted by Liveworksheet is more than the class with the PBL model)

To calculate the difference between two proportions, the following formula is used.

$$z = \frac{\frac{x_1}{n_1} - \frac{x_2}{n_2}}{\sqrt{pq\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} = \frac{\frac{5}{32}}{\sqrt{0.1208\left(\frac{2}{32}\right)}} = \frac{0.156}{0.085} = 1.836$$

Based on the calculation results obtained $z_{count} = 1.836$ and $z_{table} = 1.64$ so that $z_{count} > z_{table}$, then H_0 is rejected. That is, the proportion of students' mathematical literacy test results in PjBL model learning assisted by liveworksheet was more than the proportion of students' mathematical literacy test results in PBL learning.

3.1.1.5 Simple linear regression test

This simple linear regression test was conducted to determine whether there is an influence between student learning motivation on student mathematical literacy, where student learning motivation is the independent variable (X) and mathematical literacy is the dependent variable (Y). The simple linear regression test was conducted after fulfilling the normality test, homogeneity test, and heteroscedasticity test. The hypothesis tested is as follows.

H_0 : (There is no effect of student learning motivation on students' mathematical literacy skills in the experimental class.)

H_1 : (There is an effect of student learning motivation on students' mathematical literacy skills in the experimental class)

In Figure 1, a significance value of 0.000 is obtained, where $0.000 < 0.05$ so that H_0 is rejected and H_1 is accepted. This means that there is an effect of student learning motivation on students' mathematical literacy skills in the experimental class.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6.631	12.219		.543	.591
	Motivation to learn	.970	.205	.654	4.736	.000

a. Dependent Variable: Mathematical Literacy

Figure 1. SPSS Output of Simple Linear Regression

3.1.2 Qualitative Data

The qualitative data in this research is in the form of test results and interviews on mathematical literacy skills. Based on the results of the student learning motivation questionnaire in the Project Based Learning Assisted Liveworksheet class, namely class VIII G, the results showed that the level of student learning motivation was different. Of the 32 students in the class using the Project Based Learning model assisted by Liveworksheets, 6 students were selected as research subjects, namely 2 students from the high learning motivation category, 2 students from the medium learning motivation category, and 2 students from the low learning motivation category. learning motivation category. The results of each subject's work are as follows.

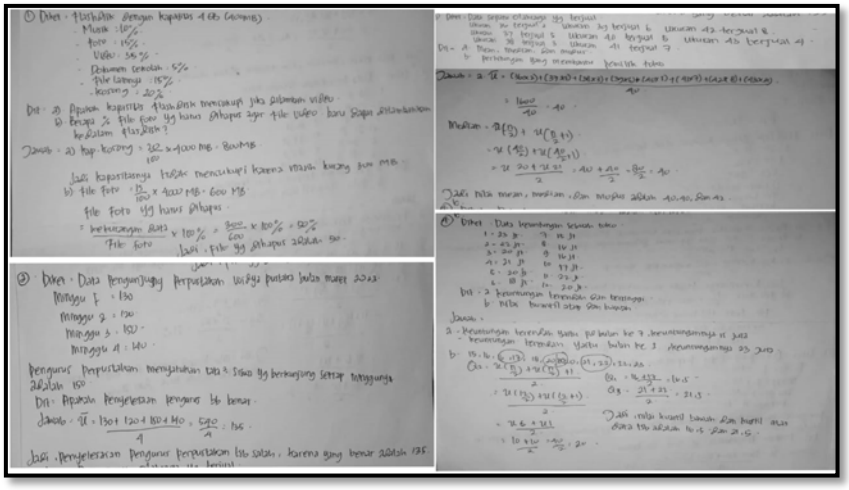

Figure 1. Student work result E -01

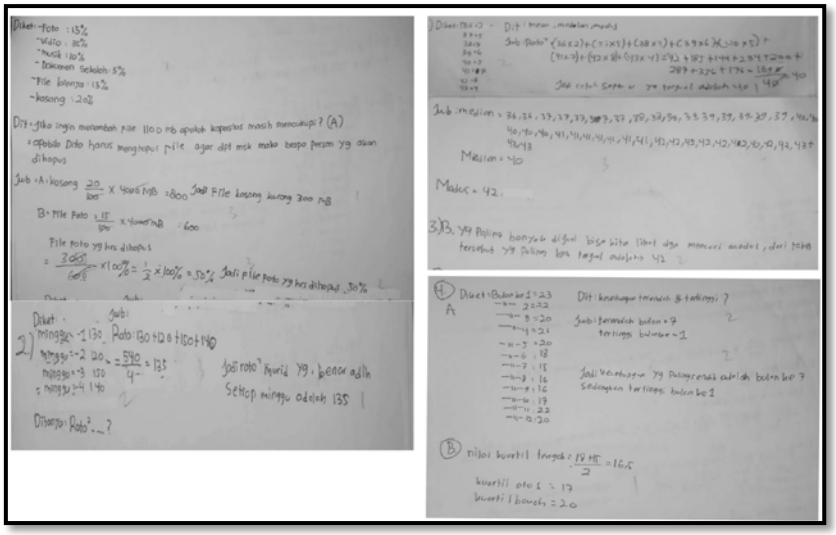

Figure 2. Student work result E-12

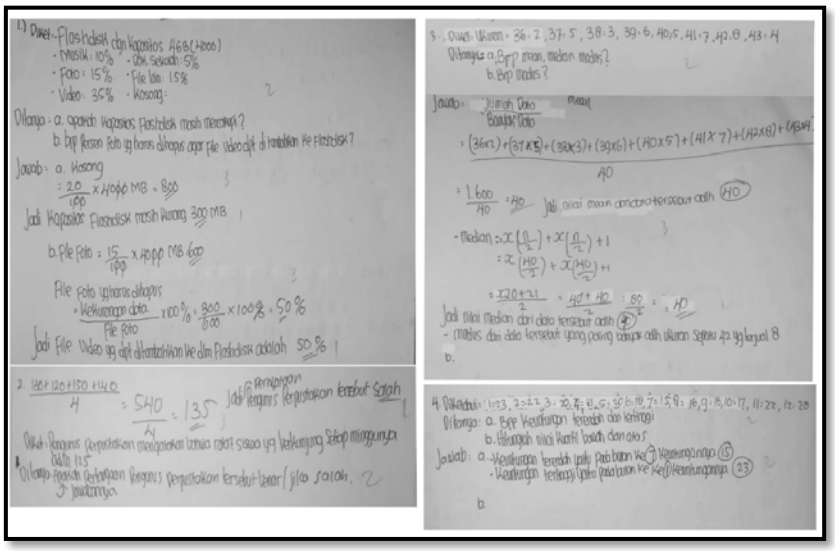

Figure 3. Student work result E-26

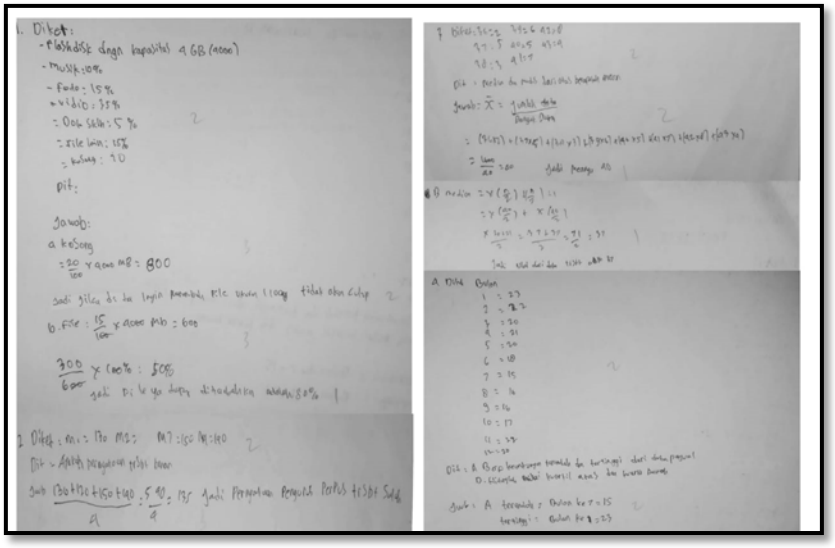

Figure 4. Student work result E-22

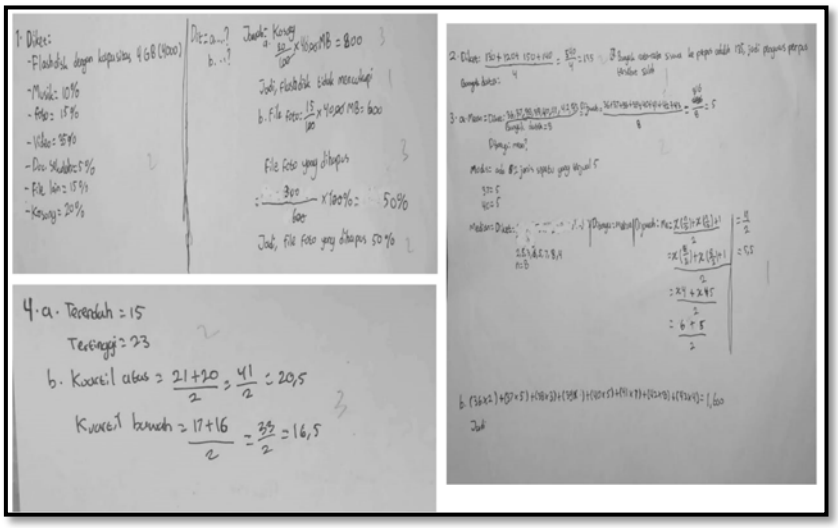

Figure 5. Student work result E-13

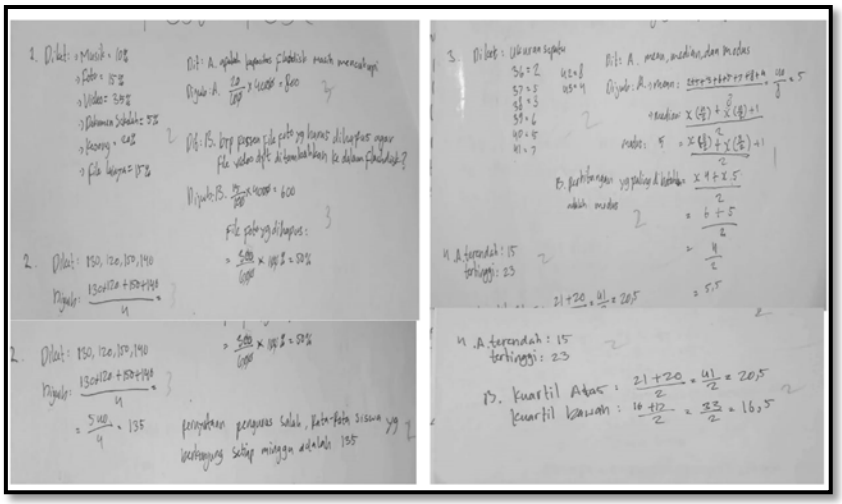

Figure 6. Student work result E-30

The summary of mathematical literacy for each subject is shown in the following table.

Table 2. Summary of Mathematical Literacy of Subject E-01

Indicator	Question Item				Description
	1	2	3	4	
I-1	✓	✓	✓	✓	In general, E-01 has met indicator 1.
I-2	✓	✓	✓	✓	In general, E-01 has met indicator 2.
I-3	✓	✓	✓	✓	In general, E-01 has met indicator 3.

Table 3. Summary of Mathematical Literacy of Subject E-12

Indicator	Question Item				Description
	1	2	3	4	
I-1	✓	✓	✓	✓	In general, E-12 has met indicator 1.
I-2	✓	✓	✓	∗	In general, E-12 has met indicator 2.
I-3	∗	✓	✓	∗	In general, E-12 has not fully met indicator 3.

Table 4. Summary of Mathematical Literacy of Subject E-26

Indicator	Question Item				Description
	1	2	3	4	
I-1	✓	✓	✓	✓	In general, E-26 has fulfilled indicator 1.
I-2	✓	✓	✓	∗	In general, E-26 has fulfilled indicator 2.
I-3	∗	✓	✓	∗	In general, E-26 has not fully met indicator 3.

Table 5. Summary of Mathematical Literacy of Subject E-22

Indicator	Question Item				Description
	1	2	3	4	
I-1	✓	✓	✓	✓	In general, E-22 has fulfilled indicator 1.
I-2	✓	✓	∗	-	In general, E-22 has not fully met indicator 2.
I-3	-	✓	∗	∗	In general, E-22 has not fully met indicator 3.

Table 6. Summary of Mathematical Literacy of Subject E-13

Indicator	Question Item				Description
	1	2	3	4	
I-1	✓	*	✓	∗	In general, E-13 has not fully met indicator 1.
I-2	✓	✓	-	∗	In general, E-13 has not fully met indicator 2.
I-3	✓	✓	-	∗	In general, E-13 has not fully met indicator 3.

Tabel 7. Summary of Mathematical Literacy of Subject E-30

Indicator	Question Item				Description
	1	2	3	4	
I-1	✓	∗	*	∗	In general, E-30 has not fully met indicator 1.
I-2	✓	✓	-	∗	In general, E-30 has not fully met indicator 1.
I-3	-	✓	-	-	In general, E-30 does not fulfill indicator 3.

Based on the table above, subjects with high learning motivation categories are E-01 and E-12, E-01 fulfills all three indicators of mathematical literacy in each item and E-12 fulfills all three indicators of mathematical literacy in 2 items out of 4 items given, but E-12 has not fully met one of the indicators of mathematical literacy in item number 1 and number 4. Based on the analysis that has been done, students with high learning motivation categories have good literacy skills. They tend to fulfill all three indicators of mathematical literacy, namely identifying aspects of the problem and transforming the problem into an appropriate mathematical model into mathematical form, applying mathematical concepts, facts, algorithms, rules and structures when finding solutions, and reinterpreting mathematical results into real problems and evaluating the results or conclusions.

The research subjects with moderate learning motivation categories are E-26 and E-22, E-26 fulfills all three indicators of mathematical literacy in two questions out of four given, namely item number 2 and number 3. However, E-26 has not fully met the third indicator in item number 1 and item number 4 and has not fully met the second indicator in item number 4. Then subject E-22 fulfills all three indicators of mathematical literacy in one item, namely item number 2 of the four items given, while in the other three items E-22 does not meet one of the indicators of mathematical literacy. Based on the analysis that has been done, students with moderate learning motivation category have moderate mathematical literacy, because they tend not to meet one of the three indicators of mathematical literacy in this study, namely identifying aspects in the problem and converting the problem into an appropriate mathematical model into mathematical form, applying mathematical concepts, facts, algorithms, rules, and structures when finding solutions, and reinterpreting mathematical results into real problems and evaluating the results or conclusions.

Subjects with low learning motivation category, namely E-13 and E-30, E-13 fulfilled all three indicators of mathematical literacy in one problem out of four items given, namely item number 1. For the other three items, E-13 did not fulfill one to two indicators of mathematical literacy. In item number 2, E-13 did not fully meet the first indicator of mathematical literacy, in item number 3 did not meet the second and third indicators, and in item number 4 did not fully meet all three indicators. Then subject E-30 did not fulfill all three indicators on all items. In item number 1, E-30 did not meet the third indicator, in item number 2 did not fully meet the first indicator, in item number 3 did not fully meet the first indicator, and did not meet the second and third indicators, then in item number 4 did not fully meet the first and second indicators, and did not meet the third indicator. Based on the analysis that has been done, students with low learning motivation category have low mathematical literacy. They tended not to meet most of the indicators of mathematical literacy in this study, namely identifying aspects of the problem and transforming the problem into an appropriate mathematical model into mathematical form, applying mathematical concepts, facts, algorithms, rules and structures when finding solutions, and reinterpreting mathematical results into real problems and evaluating the results or conclusions.

3.2 Discussion

Based on the analysis of the final data, namely the data on the results of the mathematical literacy posttest that has been carried out in the experimental class after participating in learning with the PjBL model assisted by liveworksheet, it is obtained that the posttest results of students' mathematical literacy in the class with the PjBL model assisted by liveworksheet reach actual completeness on average. By using the right one-sided sample test, the value of $t_{count} = 9.53$ and $t_{table} = 2.0395$ is obtained, where the t_{tabel} value is obtained from the t distribution list with a chance = 0,95 and dk = 31. Obtained $t_{count} = 9.53 > t_{table} = 2.0395$ so that H_0 is rejected. Then by using the one-party proportion test (right side), the value of z_{count} = 2.02 and z_{table} = 0.45 = 1.64, the z_table value is obtained from the standard normal list with a chance = 0.45. Obtained $z_{count} > z_{table}$, so $H_0$is rejected. From this test, it can be concluded that students' mathematical literacy skills after participating in learning with the PjBL model assisted by liveworksheet on statistical material have reached the Actual Completion Limit of 44,91 at least at a proportion of 75%, namely 30 out of 32 students have reached individual completeness or as many as 93.75% of students who take the math literacy test have reached individual completeness.

This shows that learning with the PjBL model assisted by liveworksheet can develop students' mathematical literacy skills. This is in line with Manurung et al. (2022) which states that PjBL has an effect on students' mathematical literacy skills. This is also supported by the research of Handayani et al. (2022) which states that the use of liveworksheet in learning can improve student learning outcomes. In addition, Roikhatul Jannah et al. (2021) stated that learning with the PjBL model can improve students' mathematical literacy skills. Nitasari et al. (2018) in their research also stated that the application of the project-based learning model can improve learning outcomes and mathematical literacy skills.

The posttest results of students' mathematical literacy obtained the average for the experimental class is 64 with the lowest score is 40 and the highest score is 91. The number of students who have reached the Actual Completion Limit (BTA) of 44.91 is 30 students. The average posttest for the control class was 58.06 with the lowest score of 40 and the highest score of 89. The number of students who have reached the Actual Completion Limit is 25 students.

In the one-sided t-test (right side), the value of $t_{count} = 1.788$ and t_{table} =1.669, the value of t_{table} is obtained from the t distribution table with a chance = 0.95 and dk = 62. Obtained $t_{count} > t_{table}$ so H_0 is rejected. Furthermore, in the one-party two-proportion difference test (right side), the value of z_{count} =

1.836 and $z_{table} = 1.64$, the value of z_{table} is obtained from the standard normal list with a chance= 0,.5=0.45. $z_{count} > z_{table}$, so H_0 is rejected.

From these two tests, it is obtained that the average test of students' mathematical literacy skills in PjBL learning assisted by liveworksheet is more than the average test of students' mathematical literacy skills with PBL learning and the proportion of students who completed the mathematical literacy test in the PjBL model class assisted by Liveworksheet is more than the class with the PBL model. So it can be concluded that students' mathematical literacy in the PjBL model assisted by liveworksheet is better than students' mathematical literacy in the PBL model..

These results are in accordance with research conducted by Ayuningtyas & Dhewy (2018) which states that the mathematical literacy of students given the PjBL model is better than the mathematical literacy of students who are not given the PjBL model. This is also supported by the research of Amelia et al. (2022) which states that there is a significant difference in the effect of the application of learning models on students' mathematical literacy skills. Hamidah et al. (2022) in their research also stated that there was a significant effect on the application of the PjBL model on students' mathematical literacy.

Based on simple linear regression tests conducted with the help of the IBM SPSS Statistic 26 program. The sig value is $0.000 > 0.05$, so H_0 is rejected. This means that there is an effect of student learning motivation on students' mathematical literacy skills in the experimental class, there is a linear relationship between the learning motivation variable and students' mathematical literacy. And to find out the magnitude of the contribution of the learning motivation variable to the mathematical literacy variable seen from the coefficient of determination R square (R^2) at the Model Summary output which is 0.428 or 42.8%. This value explains that the variation in mathematics literacy scores is caused by 42.8% of learning motivation factors and 57,2% by other factors not examined in this study. This is in line with Santia (2018) that learning motivation affects mathematical literacy. In addition, Fatchurrohman et al. (2022) stated that the higher the student's learning motivation, the higher the mathematical literacy results. Student motivation in learning is influenced by several factors. These factors include learning, including student ideals or aspirations, student conditions, student abilities, environmental conditions, and dynamic elements in learning and teacher efforts in learning students (Jannah & Sontani, 2018). The environment is one of the external factors that can foster motivation in a person to learn (Emda, 2015). So that with various innovations in learning, it can increase the opportunity to increase learning motivation..

The description of students' mathematical literacy in terms of learning motivation is: (1) Subjects with high learning motivation have high mathematical literacy skills because they tend to be able to fulfill all three indicators of mathematical literacy well; (2) subjects with moderate learning motivation have moderate mathematical literacy skills, because there are still indicators of mathematical literacy that have not been fulfilled properly, namely indicators of reinterpreting mathematical results into real problems and evaluating the results or conclusions; (3) subjects with low learning motivation have low mathematical literacy skills, because they do not fulfill all three indicators of mathematical literacy well.

4. Conclusion

Based on the results of the study, it can be concluded that students' mathematical literacy in Project Based Learning model learning assisted by Liveworksheet achieved actual learning completeness on average of 44,91, students' mathematical literacy in Project Based Learning model assisted by Liveworksheet is better than students' mathematical literacy in Problem Based Learning model, learning motivation affects students' mathematical literacy with a percentage of 42,8% and 57,2%, and each level of learning motivation has different mathematical literacy skills, namely: (1) subjects with high learning motivation have high mathematical literacy skills because they tend to be able to fulfill all three indicators of mathematical literacy well; (2) subjects with moderate learning motivation have moderate mathematical literacy skills, because there are still indicators of mathematical literacy that have not been fulfilled properly, namely indicators of reinterpreting mathematical results into real problems and evaluating the results or conclusions; (3) Subjects with low learning motivation have low mathematical literacy skills, because they do not fulfill all three indicators of mathematical literacy well.

References

Amelia, I., Syamsuri, S., Santosa, C. A. H. F., & Fatah, A. (2022). Meta Analisis: Pengaruh Model Pembelajaran Terhadap Kemampuan Literasi Matematis Siswa. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *6*(2), 1720–1730. https://doi.org/10.31004/cendekia.v6i2.1410

Ayuningtyas, N., & Dhewy, R. C. (2018). *Hasil Peer Review Untuk Penulis Pertama Artikel Penerapan PjBL Terhadap Kemampuan Literasi Matematiks (Uncertainty and Data) Untuk Siswa SMP*. *2*(01), 34–47. https://repository.stkippgri-sidoarjo.ac.id/id/eprint/1064

Emda, A. (2015). *Motivasi Pembelajaran Perspektif Guru dan Siswa*. *5*(2).

Faiqoh, E., Yaniawati, R. P., & Purwanto, B. H. (2020). Pengembangan Bahan Ajar Kontekstual Berbasis Mobile learning pada Materi Lingkaran untuk Meningkatkan Kemampuan Literasi Matematika dan Motivasi Belajar Peserta Didik SMAN 1 Lembang. *Pendidikan Matematika*, *10*(1), 1–4. https://doi.org/10.29408/jel.v6i1.XXXX

Fatchurrohman, M., Mulyono, M., & Rosyida, I. (2022). Peran Motivasi Belajar Terhadap Literasi Matematika pada Peserta Didik Kelas VII. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *6*(2), 342. https://doi.org/10.33603/jnpm.v6i2.6275

Hamidah, K. F. N., Hartini, H., & ... (2022). Pengaruh Model Pembelajaran Project Based Learning terhadap Literasi Matematika pada Siswa Kelas Tinggi SDN Tamanarum 1. … *Konferensi Ilmiah Dasar*, *3*, 1207–1215. http://prosiding.unipma.ac.id/index.php/KID/article/view/2947%0Ahttp://prosiding.unipma.ac.id/index.php/KID/article/download/2947/2298

Handayani, T. T., Trisnawati, & Rhosyida, N. (2022). *Peningkatan Hasil Belajar Matematika Menggunakan Liveworksheet Pada Siswa Kelas V SD Negeri 1 Wiro*. 12–18.

Jannah, S. N., & Sontani, U. T. (2018). Sarana Dan Prasarana Pembelajaran Sebagai Faktor Determinan Terhadap Motivasi Belajar Siswa. *Jurnal Pendidikan Manajemen Perkantoran*, *3*(1), 210. https://doi.org/10.17509/jpm.v3i1.9457

Manurung, M. R., Sormin, S. H. B., Novita, L., & J. B. Hutauruk, A. (2022). Pengaruh Model Pembelajaran Project Based Learning (PjBL) Terhadap Kemampuan Literasi Matematis VIII SMPN 1 Simanindo. *Laplace : Jurnal Pendidikan Matematika*, *5*(2), 391–400. https://doi.org/10.31537/laplace.v5i2.776

Monika, M., & Adman, A. (2017). Peran Efikasi Diri Dan Motivasi Belajar Dalam Meningkatkan Hasil Belajar Siswa Sekolah Menengah Kejuruan. *Jurnal Pendidikan Manajemen Perkantoran*, *2*(2), 109. https://doi.org/10.17509/jpm.v2i2.8111

Mujib, M., Mardiyah, M., & Suherman, S. (2020). STEM : Pengaruhnya terhadap Literasi Matematis dan Kecerdasan Multiple Intelligences. *Indonesian Journal of Science and Mathematics Education*, *3*(1), 66–73. https://doi.org/10.24042/ijsme.v3i1.5448

Muliastrini, N. K. E. (2020). New Literacy sebagai Upaya Peningkatan Mutu Pendidikan Sekolah Dasar di Abad 21. *Jurnal Pendidikan Dasar Indonesia*, *4*(1), 115–125.

Nitasari, A., Suyitno, H., & Isnarto. (2018). Analysis of Mathematical Literacy Ability on PjBL Model Assisted by Observation Independent Task. *Unnes Journal of Mathematics Education*, *7*(2), 129–136. https://doi.org/10.15294/ujme.v7i2.26462

Putra, Y. Y., Zulkardi, Z., & Hartono, Y. (2016). Pengembangan Soal Matematika Model PISA Konten Bilangan untuk Mengetahui Kemampuan Literasi Matematika Siswa. *Jurnal Elemen*, *2*(1), 14. https://doi.org/10.29408/jel.v2i1.175

Rahayu, E., & Hartono, H. (2016). *Keefektifan Model PBL dan PjBL Ditinjau dari Prestasi , Kemampuan Berpikir Kritis , dan Motivasi Belajar Matematika Siswa SMP The Effectiveness of PBL and PjBL Models in Term of Achievement , Critical Thinking Skills , and Motivation in Mathematics Learni*. *11*, 1–10.

Ratnasari, N., Tadjudin, N., Syazali, M., Mujib, M., & Andriani, S. (2018). Project Based Learning (PjBL) Model on the Mathematical Representation Ability. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, *3*(1), 47. https://doi.org/10.24042/tadris.v3i1.2535

Roikhatul Jannah, R., Budi Waluya, S., & Asikin, M. (2021). Systematic Literatur Review: Pembelajaran Project Based Learning (Pjbl) Terhadap Kemampuan Literasi Matematika Siswa. *IJOIS: Indonesian Journal of Islamic Studies*, *2*(02), 227–234. http://garuda.ristekdikti.go.id/

Santia, I. (2018). Analisis Kemampuan Literasi Matematis Siswa Smp Berdasarkan Motivasi Belajar Siswa. *JIPMat*, *3*(2), 81–85. https://doi.org/10.26877/jipmat.v3i2.2748

Serin, H. (2019). Project Based Learning in Mathematics Context. *International Journal of Social Sciences & Educational Studies*, *5*(3), 232–236. https://doi.org/10.23918/ijsses.v5i3p232

Wardono, & Mariani, S. (2019). Problem based learning with Indonesian realistic mathematics education

approach assisted e-schoology to improve student mathematization. *Journal of Physics: Conference Series*, *1321*(3). https://doi.org/10.1088/1742-6596/1321/3/032094

Widiyanti, N., & Ansori, Y. Z. (2020). Pengaruh Media Pembelajaran Terhadap Motivasi Belajar Siswa Kelas V di SDN Ciparay I. *Seminar Nasional Pendidikan*, *2*, 222–228. https://prosiding.unma.ac.id/index.php/semnasfkip/article/view/325/308