Journal of Education, Teaching, and Learning
Volume 9 Number 1 March 2024. Page 74-80
p-ISSN: 2477-5924 e-ISSN: 2477-8478

EFFECTIVENESS OF PJBL AND PBL MODELS ON NUMERATIVE LITERACY BASED ON LOCAL WISDOM IN ELEMENTARY SCHOOLS

Ma'rifatul Jannah[1)], Markhamah Markhamah[2)], Fitri Puji Rahmawati[3)]

[1)] Universitas Muhammadiyah Surakarta, Indonesia
E-mail: q200220015@student.ums.ac.id
[2)] Universitas Muhammadiyah Surakarta, Indonesia
E-mail: mar274@ums.ac.id
[3)] Universitas Muhammadiyah Surakarta, Indonesia
E-mail: fpr223@ums.ac.id

Abstract. The purpose of this study is to evaluate the impact of the PjBL (Project Based Learning) and PBL (Problem Based Learning) models on literacy and numeracy abilities based on local knowledge in elementary schools. In this work, a quantitative method and a quasi-experimental design are used. Students in fifth grade at SD Muhammadiyah 08 Cilacap made up the study population, and two classes—fifth grade students in class A using the PjBL model and fifth grade students in class B using the PBL model—made up the research sample. The independent sample t-test and the paired sample t-test were used to test hypotheses. Before using the PjBL learning paradigm with PBL based on local wisdom, the typical daily test score for classes 5A and 5B was 55.95 and 59.7, respectively. The average score after managing the implementation of the PBL model is 77.7 in class 5A and 91.8 in class 5B, compared to 62, 15, and 66.6 after handling the implementation of the PjBL model in class 5A. The findings indicated that the PBL model was superior than the PjBL model in terms of improving reading and numeracy abilities based on local wisdom in elementary schools.

Keywords**:** PjBL Model; Numeracy Literacy; Local Wisdom; Elementary School

I. INTRODUCTION

The educational landscape of the twenty-first century offers students fresh opportunities to learn new things, express their creativity, and innovate while doing so the caliber of pupils who are capable of taking on 21st-century difficulties (Nurdin & jailani, 2018). In addition to cognitive skills, students must also possess emotional and psychomotor skills (Handoko, 2019). According to the Partnership for 21st Century Learning, critical thinking and problem-solving abilities, communication skills, creativity and invention abilities, and cooperation abilities are just a few of the talents that may be fostered to prepare students for the 21st century Rina & Sari (2018). Numeracy literacy abilities in pupils are one essential for developing skills for the 21st century (Wiryanto, 2020).

The capacity to read and write is referred to as literacy (Riani & Giarti, 2020). Many literacy-related activities are presently being used in all schools that have adopted the 2013 curriculum and the autonomous curriculum, claims Abidin (2020). The School Literacy Movement (GLS) pocket book, which is being strengthened by the government for each school, includes this literacy practice. The school literacy movement is a literacy movement that includes students, teachers, and parents, according to Firdaus, at al. (2021). The goal of this school literacy initiative is to help children' reading abilities develop and advance. At the moment, many schools are implementing numerous literacy initiatives, such as reading, writing, digital literacy, numeracy literacy, scientific literacy, financial literacy, and cultural literacy (Fitriyani & Markhamah, 2023). Before learning to read and write by mixing numbers and symbols in it, or what is known as numeracy literacy, literacy activities in schools can be applied to the habituation of language corners, narrative inquiries, and reading books (Readi, 2021).

The capacity to comprehend and apply mathematics to issues in diverse professional situations is known as numerical literacy. The process of developing numeracy literacy starts with the capacity to recognize and comprehend issues. Additionally, numeracy literacy include the use of language in both written and spoken forms, and its presentation requires the capacity to investigate, rationally explain, and analyze issues within the situation at hand (Rosalinda & Rahmawati, 2022). Students can learn to understand how mathematics fits into daily life by developing their numeracy literacy abilities. According to Riani & Giarti (2020), a person's reading and writing habits have a significant impact on their perception of, attitude toward, and conduct with regard to the quality of human resources.

This numeracy literacy, according to Maulidina (2019), can make it simpler for students to understand mathematics in the context of life and make social judgments. Numeracy literacy

Journal of Education, Teaching, and Learning
Volume 9 Number 1 March 2024. Page 74-80
p-ISSN: 2477-5924 e-ISSN: 2477-8478

is defined by Triyadi (2018) as a person's capacity to comprehend and interpret a message that is packed via activities involving the manipulation of language or symbols from daily life and expressing these statements through writing or writing.

Numeracy and literacy abilities are at the forefront of offering early protection against unemployment, low income, and bad health, claim Triyadi (2018). so that via a variety of habit-forming activities, reading and numeracy abilities may be reinforced from an early age. According to the OECD's 2019 publication of the 2018 PISA results, Indonesian pupils scored an average of 379 in math, compared to an OECD average of 487. This demonstrates that Indonesian pupils still have poor reading and numeracy abilities, according to Sari & Nuriyanti (2020). In addition, a number of various variables may have an impact on the reasons of Indonesian students' inadequate numeracy literacy abilities (Firdaus, at al., 2021).

The reality is that very few people really use their numeracy and reading abilities in daily life. Students may have learned the fundamental mathematical notion of counting, but their abilities to apply these ideas in practical situations or while tackling unstructured issues are significantly neglected. Consider the absence of practice with numeracy and literacy questions in daily life. This is due to the fact that a large number of instructors are still unable to create numeracy literacy questions, particularly for teachers at the primary school level so that pupils can become used to solving these non-routine problems. The Central Statistics Agency's (BPS) three-year study on Indonesian children's interest in reading and viewing, which was last carried out in 2012, provides more evidence for this claim. Only 17.66% of Indonesian youngsters, according to the BPS data, were interested in reading. Those that are interested in viewing make up 91.67% of the population (Surya, 2017). Numerous pupils continue to feel that reading is unnecessary and that math and literacy are merely time-filling activities. They also continue to believe that not reading would not harm them in any way. The application of numeracy and literacy skills in primary schools is hampered by this (Triyadi, 2018).

Through local culture, one may learn about primary school pupils' reading and numeracy skills. This is consistent with Argaw, at al. (2016), which shows that teaching literary literacy to pupils while also educating them about local knowledge and the environment fosters the virtues of loving culture and appreciating cultural diversity. In addition, putting the 6M literacy program into practice is a reasonably simple and successful method (Maulidina, 2019). It's crucial to emphasize the value of reading in local communities from a young age. Additionally, a plan to improve cultural literacy was unveiled by the Ministry of Education and Culture in 2017. One of the ways of teaching cultural literacy is in or outside of the classroom. Teachers and students, however, frequently face a variety of challenges. Making the instructor read the text that has been bundled in the learning process is just a 15-minute habit because of the demands of the subject that must be finished in one semester.

In line with the research opinion of Juandi & Tamur (2021), who explains that there are many students who find it difficult to solve math problems in the form of word problems, the results of his research show that 1 student out of 16 students has scores in the moderate category and the rest have a low category in their mathematical literacies. Several barriers to the application of local wisdom-based numeracy literacy resulted in weak students' ability to solve math problems. Due to their poor reading skills and lack of interest in reading questions carefully, these pupils' local wisdom-based numeracy literacy skills are poor. Additionally, the key factor contributing to pupils' poor numeracy literacy is the absence of creativity in the use of relevant learning methods. According to Amalia, at al. (2021), the teacher's choice of a learning model can have an impact on the students' numeracy and literacy abilities. To enhance students' literacy and numeracy abilities in arithmetic, new approaches to math education are required. Innovations that may integrate numeracy literacy abilities with suitable learning models by bringing up the subject of local knowledge, as per Rosalinda & Rahmawati (2022), will provide students the chance to investigate their perceptions of learning mathematics. The Project Based Learning (PjBL) and Problem Based Learning (PBL) modes of learning can help students' reading and numeracy abilities.

The project-based learning model is a fun way to learn because it aims to change the way students learn on their own by boosting learning motivation, encouraging students to be more creative in their work, coming up with original ideas, and using critical thinking to solve a challenge at school. (Abidin, 2020). The PjBL learning paradigm is thought to be successful in enhancing students' literacy and numeracy abilities.

Students' interest will grow as they learn mathematics using the PjBL model and the PBL model combined with local knowledge from the school. Aspects of culture or local wisdom in learning will draw students' attention by incorporating local wisdom because the types of questions are different and more interesting, both on the teacher's and the student's side, and by doing so, a culture will be formed. This is according to Amalia, at al. (2021). Think logically and systematically, and cultivate a culture of problem-solving in the rapidly evolving field of education. The amount of reading practice pupils get will have an effect on how well students are taught numeracy and literacy. This serves as the context for the study, which looks at the impact of the PjBL with PBL learning model on reading and numeracy abilities based on local knowledge in primary schools. In order to promote numeracy literacy, this study intends to: (1) ascertain the improvement in learning outcomes utilizing the PjBL and PBL models; and (2) ascertain students' views about these learning models when combined with local knowledge. Therefore, it is hoped that this article will improve on earlier studies and serve as a teacher's resource for the creation of effective learning models for enhancing reading and numeracy abilities based on local wisdom in primary schools.

II. METHODS

This study providing pretest and posttest designs, this study is a quasi-experimental one (Quasi Experiment). For the academic year 2021–2022, the whole 5th grade student body of SD Muhammadiyah 08 Cilacap is the population utilised.

Journal of Education, Teaching, and Learning
Volume 9 Number 1 March 2024. Page 74-80
p-ISSN: 2477-5924 e-ISSN: 2477-8478

Purposive sampling was used to collect the research sample, and classes 5 A and 5 B were chosen as the experimental classes.

Five-item description questions using the PjBL and PBL models with local knowledge served as the study's primary data gathering tool. The test instrument has already passed tests for theoretical validity and empirical validity before it was deployed. The employed instrument questions have been deemed to satisfy the established standards for validity, reliability, degree of difficulty, and question discrimination. The validity of the item instrument was examined using the SPSS 25 program, and it was deemed to be valid. Because the reliability value of the pretest assessed for reliability had a cronbach's alpha value, the reliability test was deemed reliable to be employed in this investigation.

Giving pretest and posttest questions to package A using the PjBL model and package B using the PBL model based on local wisdom served as the data collecting stage. Following the administration of the pretest and posttest in both classes, the data was subjected to preliminary testing, namely the normality test and homogeneity test using SPSS 25 software. the impact of learning models and PBL models on students' reading and numeracy skills using data analysis with the aid of the SPSS 25 and Microsoft Excel 2010 programs.

III. Results And Discussion

The learning model is a strategy or framework that serves as a roadmap for organizing classroom learning (Amalia, at al., 2019). Students will get fresh experiences using an innovative learning strategy, which will optimize learning in the classroom. Handoko (2019) asserts that the PBL learning model may enhance students' ability to solve problems, recall information more readily, grasp concepts better, boost knowledge that is applicable to real-world situations, promote critical thinking, foster teamwork, foster leadership, and inspire learning. The PBL learning paradigm offers several advantages to the learning process that students will achieve by becoming familiar with challenges. so that in the future, pupils are capable of choosing their own course of action.

The George Lucas Educational Foundation (Andersson & Rosen, 2015) states that the PjBL model has a learning syntax, and that one of its learning steps is as follows: learning starts with key questions, planning project work rules, making activity schedules, keeping track of project participants' progress, evaluating student work outcomes, and evaluating student learning experiences. According to a study by Faridah et al. published in 2022. The study's findings, according to Faridah and Nailiyah, showed that the fifth grade students at MI Al-Fithrah Surabaya improved their numeracy and digital literacy abilities through the application of the PjBL (project-based learning) learning model. The PBL model is the alternative problem-based learning paradigm to PjBL. In addition to fostering student initiative and internal desire for learning, problem-based learning models may enhance students' critical thinking abilities and help them build interpersonal bonds while working in groups. In contrast, Rijanto & Iqrammah (2020) outlines the steps of PBL learning, including introducing students to a topic, organizing their research, performing experiments, presenting the findings of those experiments, and analyzing and assessing the analysis's impact on problem-solving.

According to Juandi & Tamur (2021) found a correlation between the PBL model's adoption and a rise in students' numeracy and reading abilities. According to the PBL learning model, students are provided with a learning strategy that uses real-world situations as a jumping-off point for learning in order to develop their problem-solving skills (Sidupa, 2018). The learning phases (syntax) in the PBL learning paradigm are as follows: Introducing students to a problem in the first stage, planning their research in the second stage, assisting them in their independent or group research in the third stage, presenting their findings in the fourth stage, and analyzing and evaluating their problem-solving techniques in the fifth stage (Amalia, at al., 2021).

In order to gather data for this study, multiple choice questions and essays that have undergone validity and item difficulty testing were used in the pretest and posttest questions. The following are the test findings for determining how challenging the research instrument's questions were.

Table 1.
Question Difficulty Index Criteria

P Value	Intrepertation
< 0,30	Difficult
0,30-0,70	Mediteran
> 0,70	Easy

Table 2.
Recapitulation of Problem Difficulty Levels

Difficult Level	Interpretation	Number	Total	Precentage
<0,30	Difficult	-	0	0%
0,30-0,70	Mediteran	1, 2, 3, 4, 7, 8, 9, 12, 13, 14, 15, 16, 17, 18, 20	15	75%
>0,70	Easy	5, 6, 10, 11, 19	5	25%

The findings of the item difficulty test that was employed as a research tool indicate that the questions' degrees of difficulty vary. The number of questions with a difficult interpretation was zero, the number of questions with a moderate interpretation was fifteen, and the number of questions with an easy interpretation was five. A good question, according to Arikunto (Sidupa, 2018), is one that is neither either simple nor very complex. Students are not motivated to tackle problems that are too simple, and they will give up trying to solve problems that are too tough. If the products are neither too challenging nor too easy, they might be said to be good. The potential to accurately respond to a question at one's degree of skill or knowledge of the question's easy or tough classification is known as the question's level of difficulty (Zyadin, at al., 2012). The difficulty index of the questions is listed below.

Journal of Education, Teaching, and Learning
Volume 9 Number 1 March 2024. Page 74-80
p-ISSN: 2477-5924 e-ISSN: 2477-8478

There are two different sorts of questions: multiple choice and essay. Testing of the data derived from the study findings is done after the questions are tested on students and the results are obtained from the dispersed replies.

Data prior to handling was collected using math exam results from students in grade 5 SD Muhammadiyah 08 Cilacap. 40 students from classes 5A and 5B provided the information for this study.

Table 3.

Students' scores on speed material before research

No	Class A	Class B
1	68	48
2	75	65
3	64	32
4	72	40
5	20	28
6	45	70
7	28	28
8	88	94
9	32	70
10	80	28
11	52	50
12	83	38
13	66	76
14	40	66
15	38	70
16	55	76
17	60	72
18	90	20
19	70	76
20	68	72
Average	59,7	55,95

Based on the results of the daily examinations that students took prior to adopting the PjBL and PBL models to teach mathematics, it can be shown that class A students received an average score of 59.7, while class B students received an average grade of 55.95. This demonstrates that the pupils' arithmetic test results are considered to be below average. Numerous things can contribute to this, one of which is pupils' poor mathematical literacy. The PjBL model was used in class A and the PBL model in class B in an effort to boost students' mathematical literacy. Subsequently, repeated examinations were administered after answering queries based on conventional knowledge.

The PjBL model and the PBL model based on local wisdom are both used to evaluate how well students' numeracy and literacy abilities have developed. After the handlers applied the PjBL and PBL models for numeracy literacy abilities based on local knowledge, posttest scores were obtained. Data from the experimental class and the control class, each with 20 students, were collected before and after the tests. Students are given five essay questions with a maximum score of 20 points each as part of the pretest and posttest, which are administered before the learning activities are completed. The experimental class and the control class's pretest and posttest results are as follows:

Table 4
Results of Control Class and Experiment Class Pretest Values

No	Control Class	Experiment Class
1	71	58
2	78	70
3	66	36
4	76	42
5	26	80
6	58	38
7	31	88
8	100	90
9	37	76
10	70	39
11	90	56
12	64	47
13	93	80
14	76	76
15	49	80
16	42	77
17	65	25
18	98	86
19	64	60
20	78	39
Average	66,6	62,15

Based on the findings of the pretest scores, it can be noted that students in the control class and the experimental class both received pretest scores in mathematics learning that were lower than the Minimum Completeness Criteria (*KKM*) of 70, at 66.6 and 62.15 respectively. Twenty of the students in the experimental and control courses scored at or above the *KKM*, whereas the other twenty did not.

Table 5. Post test results for Control Class and Experiment Class

No	Control Class	Eksperiment Class
1	76	90
2	78	91
3	69	98
4	77	83
5	66	92
6	78	87
7	63	96
8	100	100
9	75	92
10	88	86
11	90	84
12	72	82
13	93	100
14	76	90
15	63	100
16	65	98
17	71	85
18	100	100
19	76	90
20	78	92
Average	77,7	91,8

The statistics of students who scored greater than *KKM* 70 were in the control class at 77.7 and in the experimental class at 91.8, according to the findings of the post-test scores in the table. Five students in class A did not receive a *KKM* score of 70 after engaging in learning activities using the PBL model, while as many as 15 students did. In class B, all experimental students had *KKM* scores greater than 70 after engaging in learning activities using the PBL model.

based on the students' completed posttest answer scores. A preparatory test was conducted in order to determine the posttest results in classes 5A and 5B in the normal and homogenous distribution of the experimental class. The Kolmogorov-Smirnov formula and SPSS 25 are used for the normalcy test.

Journal of Education, Teaching, and Learning
Volume 9 Number 1 March 2024. Page 74-80
p-ISSN: 2477-5924 e-ISSN: 2477-8478

Following are the results of normality test calculations on pretest data:

Table 6. Posttest Value Normality Test Results

		Kolmogorov-Smirnova			Shapiro-Wilk		
	Class	Statistic	Df	Sig.	Statistic	df	Sig.
Study Result	Control	.239	20	.004	.909	20	.062
	Eksperiment	.145	20	.200*	.918	20	.090

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

The samples were normally distributed, as shown by the normality test results in class 5A, which had a significance of 0.062, and class 5B, which had a significance of 0.090, both of which were in the experimental class, where the value was greater than 0,05. These results were obtained using the SPSS 25 software. Ho is accepted since it may be inferred that the data were distributed according to a normal curve.

Following the declaration that the data is normally distributed, a homogeneity test is performed to determine whether or not the sample comes from a homogenous population. The total of the students' posttest response scores was employed in this study's homogeneity test. homogeneity test with SPSS 25 software and the F test formula. Table 2 below shows the results of the homogeneity test:

Tabel 7

Homogenity Test Result

	Levene Statistic	df1	df2	Sig.
Based on Mean	3.514	1	38	.069
Based on Median	2.715	1	38	.108
Based on Median and with adjusted df	2.715	1	25.907	.111
Based on trimmed mean	3.253	1	38	.079

Based on the homogeneity test findings in Table 7, it is clear that the sample in the study is homogenous or that the research data group has the same variance since the significant value of the homogeneity test results is 0.069, where the value is more than 0.05.

Hypothesis testing, in which Ho is accepted or Ha is denied, is done after the prerequisite test is conducted on the students' posttest results from the scores of the responses that have been completed by students. T-test calculations on paired sample t-tests and independent sample t-tests were carried out.

According to Wiryanto (2020), the project-based learning learning model is a fun learning model because it is anticipated to be able to change the way students learn on their own by boosting learning motivation, encouraging students to be more creative in their work, coming up with original ideas, and using critical thinking to solve a real-world problem. Class A served as the control class and class B served as the experimental class for this, and it was handled using the PjBL model. The George Lucas Educational Foundation (Sari & Nuriyanti, 2020) states that the following steps make up the PjBL learning process: learning begins with fundamental questions, planning project work rules, creating activity schedules, keeping track of project participants' progress, evaluating student work, and assessing student learning experience. Several syntaxes are employed in the PBL learning paradigm during the classroom learning process. The syntax of the PBL model learning is, according to Amalia, at al. (2021), as follows: (1) orienting students to a problem; (2) organizing students to research; (3) investigating students independently; (4) collecting the results of the work on the questions in a timely manner; and (5) analyzing and evaluating the process of solving problems with local wisdom. This syntax is employed in research as a manual for classroom instruction. In this study, pupils' behaviors and replies were observed using syntax.

In this study, the free sample t test (independent sample t-test) was utilized to see whether there were any notable distinctions between the PjBL and the PBL learning models that incorporated local wisdom. The posttest results in the control class and the experimental class serve as the data for the free sample t test. Table 8 below lists the outcomes of the free sample t test:

Tabel 8. Free Sample t test

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
	3.514	.069	-4.939	38	.000	-14.100	2.855	-19.880	-8.320
			-4.939	29.402	.000	-14.100	2.855	-19.936	-8.264

Based on the results of the free sample t test analysis performed using the SPSS 25 program, it is clear that there is a significant difference in student learning outcomes between grades 5A and 5B. The calculated t value is greater than the t table, specifically 4.939 > 2.02439, and the results of the free sample t test's significance are 0.000, where 0.000 is less significant than 0.05.

Using the average value in the application of the PjBL and PBL models to compare the biggest mean, it is possible to determine which learning model is the most successful.

Tabel 9. Statistic Result

Group Statistics	N	Mean	Std. Deviation	Std. Error Mean
Control	20	77.70	11.207	2.506
Eksperiment	20	91.80	6.118	1.368

Based on the information in table 9, it can be concluded that the project-based learning model is less successful since the average value of the experimental class utilizing the problem-based learning model is greater than that of the control class (91.80 > 77.70). At SD Muhammadiyah 08 Cilacap, the problem-based learning approach combined with local

Journal of Education, Teaching, and Learning
Volume 9 Number 1 March 2024. Page 74-80
p-ISSN: 2477-5924 e-ISSN: 2477-8478

knowledge is successfully applied to enhance numeracy and literacy abilities.

The second hypothesis test examined if the PBL learning paradigm utilizing numeracy and literacy had a substantial impact on student learning outcomes using a paired sample t test (Paired-Sample T Test). The experimental class's pretest and posttest scores were used in paired sample t tests. Table 10 below shows the outcomes of the paired sample t test:

Tabel 10.
Paired Sample Test

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	-29.650	17.064	3.816	-37.636	-21.664	-7.771	19	.000

Based on the paired sample t test results from table 10, which were conducted using the SPSS 25 program, it can be deduced that using problem-based learning models can enhance students' numeracy and literacy abilities and significantly impact their learning outcomes (7.771 > 2.09302 and significance of 0.000 where the value is less than 0.05).

The experimental class that used the PBL learning model and numeracy literacy had worse numeracy abilities than the class that used the PBL learning model, according to the results of the analysis of the hypothesis testing data. According to calculations made using the SPSS 25 tool, class 5A average test scores before the PjBL and PBL learning models with local knowledge were 59.7 and class 5B average test scores were 55.95, respectively. In class 5A, the average score after managing the implementation of the PjBL model was 66.6; in class 5B, it was 62.15; however, in class 5A and class 5B, the average score after dealing the implementation of the PBL model was 77.7 and 91.8, respectively. The findings indicated that the PBL model was superior than the PjBL model in terms of improving reading and numeracy abilities based on local wisdom in elementary schools.

The study analysis's findings indicate that the PBL learning model is superior than learning utilizing the PjBL model based on conventional knowledge. This is inspired by the usage of learning models, namely the PBL model, which focuses on students (student centers) who are educated to solve issues in real life by putting an emphasis on students' communication, teamwork, idea generation, and reasoning abilities. In order to develop and have an impact on students' numeracy and literacy abilities, Sidupa (2018) claim that the PBL learning paradigm requires students to participate in learning activities and in addressing actual issues. This might affect student motivation and interest. With the use of the PBL learning model, students can express their own concepts in solving, formulating, and interpreting the problems they face by participating in the learning process (student center). In addition, collaborative learning makes it simpler for students to understand learning.

Additionally, data analysis findings indicate that, in comparison to the control class using traditional learning models, learning using the PBL model features phases or syntax that may instruct students to enhance their numeracy literacy abilities. In order to develop students' numeracy literacy abilities, Hardiarti (2017: 729) claims that employing the PBL approach while learning mathematics exposes students to challenges that are designed to train and aid them in applying their mathematical knowledge to solve the problems they encounter. Students who learn the PBL model through a reasoning process are forced to seek out issues through trial and observation in order to collect knowledge and identify problem-solving approaches that might improve students' numeracy literacy (Maulidina, 2019).

Learning the PBL model is considered difficult for students to do because they are not used to questions that are not complicated, so students become less optimal at solving problems with numeracy literacy. The habit of learning with the PBL model needs to be done in order for students to get used to understanding numeracy literacy questions with local wisdom. Surya (2017) explains that using the PBL model in the classroom can help students become more numerate and literate. This is because the PBL model's stages or syntax, which include problem identification, independent study, investigation, exchange of knowledge, and assessment, make it easier for students to develop these skills. in order to develop a generation that is prepared for the difficulties.

IV. CONCLUSION

Based on the results of processing and analysis of data from research conducted at SD Muhammadiyah 08 Cilacap for students in grade 5 for the 2021/2022 academic year, the following conclusions are obtained:

1. Utilizing the PBL paradigm to teach students with numeracy literacy has a greater impact than teaching students with numeracy literacy with local wisdom. Before using the PjBL learning paradigm and PBL with local wisdom, the daily test average in classes 5A and 5B was 59.7 and 55.95, respectively. The average score after managing the application of the PBL model was 77.7 in class 5A and 91.8 in class 5B, but the average score after applying the PjBL model in class 5A was 66.6 and 62.15 in class 5B.
2. In comparison to the PjBL approach, which relied on students' numeracy literacy based on local knowledge, there is an improvement in learning results for students utilizing the PBL paradigm.

REFERENCES

Abidin, Z. (2020). Efektivitas Pembelajaran Berbasis Masalah, Pembelajaran Berbasis Proyek Literasi, Dan Pembelajaran Inkuiri Dalam Meningkatkan Kemampuan Koneksi Matematis. *Pendidikan dasar*, 7(1) 37-53. https://doi.org/10.23917/ppd.v1i1.10736

Amalia, N., Prayitno, H. J., Utami, R. Di., & Saputri, D. Y. (2021). Primary teachers' perspectives on teaching critical reading incorporating multimodal text. *Journal of Physics:*

Conference Series, *1842*(1). https://doi.org/10.1088/1742-6596/1842/1/012034

Amalia, N., Prayitno, H., Utami, R., Saputri, D., Irawan, R., & Wati, D. (2019). *Analysis of Upper Primary Students' Critical Reading Skills in Surakarta Based on School Accreditation*. *4*(4). https://doi.org/10.4108/eai.7-8-2019.2288431

Andersson, I. M., Gunnarsson, K., & Rosèn, G. (2015). Role of headmasters, teachers, and supervisors in knowledge transfer about occupational health and safety to pupils in vocational education. *Safety and Health at Work*, *6*(4), 317–323. https://doi.org/10.1016/j.shaw.2015.07.012

Argaw, S, A., Haile, B, B., Ayalew, T, B., & Kuma, G, S. (2016). The Effect of Problem Based Learning (PBL) Instruction on Student's Motivation and Problem Solving Skills of Physics. *Journal of Mathematics Science and Technology Education*, 13(3) 857-871. https://10.12973/Eurasia.2017.00647a

Ayu, R. & Giarti, S. (2020). Efektivitas Model Pembelajaran Problem Based Learning (PBL) dan Discovery Learning. *Jurnal Penelitian Tiindakan Kelas dan Pengembangan Pembelajaran*, 3(3) 1-8. https://10.31604/ptk.v4i1.1-8

Febrianti, R. & Sari, P. (2018). Pentingnya Literasi Matematika Untuk Anak Sekolah Dasar Luar Biasa C. *Jurnal Universitas Negeri Semarang*, 208-216. https://journal.unnes.ac.id/sju/index/php/prisma/

Firdaus, A., Asikin, M., Waluya, B. & Zaenuri. (2021). Problem Based Learning (PBL) Untuk Meningkatkan Kemampuan Matematika Siswa. *Jurnal Pendidikan, Sosial, dan Agama*, 13(2)187-200. DOI: 10.37680/qalamuna.v13i2.871

Fitriyani, H., & Markhamah, M. (2023). Gerakan Literasi Sekolah dalam Upaya Meningkatkan Minat Baca Siswa MIM PK Kertonatan Kartasura. *Pedagogi: Jurnal Ilmu Pendidikan*, 23(1): pp. 81-87, DOI: https://doi.org/10.24036/pedagogi.v23i1.1470

Hadi, H. (2019). Model Pembelajaran Problem Based Learning (PBL) Berorientasi Literasi Matematika. *Jurnal Conference on Research & Communities Services*. 274-281. ISSN: 2686-1259.

Juandi, Dadang & Tamur, Maximus. (2021). The Impact of Problem Based Learning Toward Enhancing Mathematical Thinking: A Meta-Analysis Study. *Journal of Engineering Science and Technology*, 16(4) 3584-3561. Dadang.juandi@upi.edu

Kamil, N. & Jailani. (2018). Peningkatan Rasa Percaya Diri Dalam Pembelajaran Matematika Melalui Active Learning Tipe Active Knowledge Sharing Dengan Pendidikan Saintifik. *Jurnal Profesi Pendidikan Dasar*, 5(2) 155-166. Doi: https://doi.org/10.10.23917/ppd.v1i2.6845

Maulidina, Luluk. (2019). Penerapan Model Pembelajaran *Cooperative Learning* Tipe *Make A Macth* Dalam Meningkatkan Hasil Belajar. Skripsi. *Institut Agama Islam Negeri (IAIN).* 1-196.

Readi, A. (2021). *Implementasi Model Pembelajaran Cooperative Learning Dalam Membina Baca Kitab Kuning Santri Ma'Had Aly Ula Nurul Qarnain Sukowono.* Jurnal Pendidikan. 7(1) 16-31. DOI: https://doi.org/10.36835/attalim.v7i1.478

Rijanto, T., & Iqrammah, K. E. (2020). The Effect of Project-Based Learning Model (PjBL) and Direct Instruction (DI) on Result Learning of the Basics Building Construction and Survey Engineering From Student Learning Motivation. *Advances in Engineering Research*, *196*(Ijcse), 124–129. https://doi.org/10.2991/aer.k.201124.023

Rosalinda, R., & Rahmawati, F. P. (2022). Implementasi Inovasi Budaya Literasi Numerasi MACATUNG di Sekolah Dasar. *Jurnal Basicedu*, 6(4), 6248–6256. https://doi.org/10.31004/basicedu.v6i4.3215

Sari, Lisna,. & Nuriyanti, Risma. (2020). Efektivitas Model Pembelajaran Cooperative Learning Dengan Menggunakan Media Kokamicabi Terhadap Keterampilan Berbicara Peserta Didik Kelas IV Sekolah Dasar Negeri 02. Skripsi. *Institut Pendidikan Indonesia.* 1(1) 43-51. https://journal.institutpendidikan.ac.id/index.php/baleaksara

Sidupa, J. N. (2018). the Effectiveness of Principal Leadership: a Case Study At an International School in Bali. *Jurnal Pendidikan*, *19*(2), 117–132.

Surya, F, Y. (2017). Penerapan Model Pembelajaran Problem Based Learning (PBL) Untuk Meningkatkan Hasil Belajar Matematika Siswa Kelas IV SDN 016. *Jurnal Pendidikan Matematika*, 1(1) 38-53. ISSN: 2579-9258

Triyadi. (2018). Penerapan Model Pembelajaran *Problem Based Learning* Untuk Meningkatkan Keaktifan dan Hasil Belajar Peserta Didik. Skripsi. *Universitas Negeri Yogyakarta.* 1-226.

Wiryanto. (2020). Proses Pembelajaran Matematika Di Sekolah Dasar Di Tengah Pandemi Covid-19. *Jurnal Kajian Pendidikan dan Hasil Penelitian*, 6(2), 1-8. https://journal.unesa.ac.id/index.php/PD

Zyadin, A., Puhakka, A., Ahponen, P., Cronberg, T., & Pelkonen, P. (2012). School students' knowledge, perceptions, and attitudes toward renewable energy in Jordan. *Renewable Energy*, *45*, 78–85. https://doi.org/10.1016/j.renene.2012.02.002