



## The Influence of Problem-Based Learning Models on Students' Scientific Literacy Abilities in Class V Heat Transfer Materials in Primary Schools

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### ABSTRACT

This study aims to know the influence of learning models based on problem-based learning on the ability of scientific literacy of participants in the material of heat displacement in fifth grade elementary school. As for the background of the study, this is based on the results of interviews and observations carried out, where the ability of scientific literacy of participants still studying in class V is low as well as the lack of understanding of teachers towards various learning models. This study was carried out at SDN Banjarkemantren 2 in the even semester year 2022/2023. The research method used is Pre-Experimental Design with One Group Pretest-Posttest Design type. The sample in the study is participants in the VA class totaling 31 participants. Instruments used include instrument test form, question choice double, as well as sheet observation of teacher and participant activities of students. Data obtained from test choice double and observation related to scientific literacy ability. Data analysis used the normality test and t-test. Analysis results show that the data is normally distributed because the sig value  $> 0.05$  and in the t-test with using paired sample t-test results sig value  $< 0.05$  at level significance 5% then it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted. This matter shows that the application of learning models based on problem-based learning gives influence to the ability of scientific literacy of participants in the material of heat displacement in class V elementary school.

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## INTRODUCTION

Education basically is the process for help man in open its potential For face challenge to changes that occur . Education plays a role important in sector life man . Due with exists education quality source man will increases , so somebody can operate his life with more Good . Moment This middle world society entering a new era , the era of acceleration changes in various aspect or fields , incl field education . System applied education \_ Now ie education 21st century .

21st century education is characterized with rapidly development knowledge knowledge and technology in the field life social , esp information and communication technology \_ (Yuliati, 2017) . Refer to the statement the contain meaning that education face difficult challenges , education in the 21st century demands participant educate For own more knowledge \_ complex with accompanied various Skills Good Skills think level high , skill Work practical , skills in use technology , information , and communications , as well literacy in literacy science (Muhali, 2019) . As form from objective capable education \_ create source Power one of them is a quality human being can achieved with learning Knowledge Knowledge Nature (IPA).

At level school basic , natural science becomes One eye lessons that hold role important Because knowledge in science field becomes objective for participant educate in overcome various challenges in the global era. Study deep science level school base as means for participant educate them \_ Can For Study more Lots about science , also in general physics , theory and applications in real world life . Objective science education in schools base is develop knowledge For understand concepts useful science \_ For applied in life daily . Besides Therefore , science learning can be done develop a sense of desire knowledge and attitude positive to public relations , environment , and technology . This matter show that science learning expects participant educate to be literate science or own ability literacy science .

Literacy science is one of starting topic \_ Lots get attention in field academic . This matter because mastery ability literacy very important science for everyone for \_ finish problem . Literacy science defined in *The Program for International Student Assessment (PISA)* is ability use knowledge science , identify questions , and interesting conclusion based on evidence , in \_ \_ frame understand as well as make decision regarding with nature and the changes it makes to natural through activity man (Yuliati, 2017) . As for according to Toharuddin in (Wulandari & Sholihin, 2016) Literacy science is ability somebody For understand science , communicating science , as well apply knowledge science For solve problem so that own high attitude and sensitivity \_ to himself and his environment in take decision based on consideration science . Basically \_ literacy science is awareness and ability finish problem , using science concepts .

The National Science Education Standards (NSES) states that emphasis literacy science No only in aspect knowledge and understanding to science concepts and processes only , but also directed at a person's process in make decisions and participate in life social (Dewantari & Singgih, 2020) . Literacy science No only just participant educate will own ability reading , writing , and communicating . But literacy science can form personal participant educate For own awareness will environment .

Literacy science It is important to be integrated into the learning process in education in the 21st century . This matter Because objective education science that is increase competence participant educate For can fulfil need his life in various situation including in face various challenge living in the global era. With literacy science , participants educate expected can own sensitivity in finish global problems such as problem environment , health and economy because understanding science give solution to problem the . When talking about environment , one issue important in the era of globalization This ie the situation Far from awareness environment . Lots of it habit bad public like throw away rubbish carelessly , cutting down tree without permission , exploration mining is not

friendly environment, switch function land, etc clear indication \_ will matter This . With own ability literacy science, hopefully participant educate can overcome various problems caused by various \_ activity the .

Based on study of the International Assessment of Science Learning Outcomes organized by the Organization for Economic Cooperation and Development (OECD) as part from its PISA program, shows that literacy science participant students in Indonesia are lagging behind Far compared to other countries (Fitriani, Milama, & Irwandi, 2017) . The results of the PISA survey in 2012 showed that Indonesia was ranked 64th out of 65 countries with score 382, In 2015 occupied Ranked 64th of 72 with score of 403, most recently in 2018 it was ranked 70th out of 78 participating countries with acquisition score 396. From the survey results done the show that participant education in Indonesia is still very low to ability literacy science .

Literacy science play role important in education Because capable help participant educate become qualified human beings, can reliable, and competitive in the global market. Therefore \_ that, teachers must prepare environment engaged learning \_ participation participant educate in frame create and develop literacy science in science education . Participant educate will become passive listener and feeling \_ bored when learning only dominated by teachers with use method lecture . Saturation this is what it will be cause participant educate not enough own ability literacy and reasoning science .

Based on observations and interviews with the fifth grade teacher at SDN Banjarkemantren 2, found problem lack of teacher's understanding of various various learning models . Teacher only focused on implementation method learning in a way classic Where activity learning the tend use method lecture . That matter make participant educate passivity and participation in learning relatively low . So there is a real need for fun and engaging learning strategies participant educate more Lots activeness and cooperation, as well not quite enough answer participant educate in context teaching . Besides that, at SDN Banjarkemantren 2 still apply literacy read just what was done at the start learning with read various type book that has provided, will but seldom applied learning process For measure literacy science participant educate . Besides That participant educate Not yet used to do questions that use discourse and difficulties do questions that lead to measurement literacy science .

The low ability literacy participant educate according to (Kurnia, Zulherman, & Fathurohman, 2014) caused Lots factors, including that is curriculum, selection methods and models in learning, facilities and infrastructure, resources study, and so on . In line from opinion of these, one is obtained related factors \_ direct with learning participant educate and get it influence low literacy participant Indonesian students, namely election methods and models by teachers.

Therefore \_ that 's innovation in learning specifically learning science is very necessary For increase ability participant educate in apply science concepts and solving problem in life daily . Alternative more learning \_ can push matter the is learning through learning models based problem . This model also leads to development learning in the 21st century which also has implications for improvement various Skills participant educate, including literacy science .

Study This aim For describe influence use of learning models based problem to ability literacy science participant educate on the material displacement heat fifth grade school base . Learning model based problem according to Arends (Muis, 2019) is approach teaching based encouraging constructivist \_ participation participant educate in learning and engaging student in solution problem where problem the is incident actual or often happened to participants educate . This matter in line with opinion (Sani, 2019), according to him, it is a learning model based problem is something learning that is delivered done with method serve something problem, submit questions, encouraging inquiry and start a dialogue. Problems studied \_ should is problem contextual found by participants \_ educate in life daily .

According to (Fitriani et al., 2017) in learning based problem , participants educate can build his knowledge Alone so that they capable understand material without must memorize it , but understand meaning from material the in a way deep . (Widiana & Maharani, 2020) state that the PBL learning model focuses on problems and questions so that capable make participant educate finish problem with use which concepts and principles are appropriate and which are not Far with literacy Helpful science \_ participant educate in finish problem . Besides that , this model make participant educate as center learning and teachers only lead on stage learning . Based on exposure the researcher \_ consider that learning model based problem is a suitable learning model in increase ability literacy science participant educate Because development ability literacy science in line with objective application of learning models based problem .

Learning based problems applied to research \_ This covers stage (1) orientation problem to participant educate ; (2) organizing participant educate For Study ; (3) guiding investigation individual nor group ; (4) Develop and present results work ; (5) Analyze and evaluate the solving process problem (Arends in (Nur, Pujiastuti, & Rahman, 2016) ). Stages the expected can make ability literacy science participant educate become more Good .

PISA stipulates three dimensions big literacy science in the measurement , namely content science , science process , and context application science (Eviani, Utami, & Sabri, 2019) . (a) content science , refers to concepts key from necessary science \_ For understand phenomenon nature and the changes it makes to natural through activity man ; (b) scientific process , referring to the mental processes involved when participant educate solve problem . Like identify and interpret proof as well as explained conclusion ; (c) context science , referring to the situation in life everyday that becomes land for process application and understanding draft science . Besides dimensions literacy science that has explained above , there is a number of supporting indicators \_ dimensions the in do evaluation literacy science participant educate . In study This focused evaluation to indicator following :

**Table 1.** Indicator Literacy Science

<b>Dimensions Literacy Science</b>	<b>Indicator Literacy Science</b>	<b>Sub Indicator Literacy Science</b>
<b>Content</b>	Understand phenomenon	Understand draft with Correct
<b>Process</b>	Identify problem scientific	Related with possible problems _ investigated in a way scientific
	Explain phenomenon in a way scientific	Describe or interpret phenomenon scientific and predictive change
	Use proof scientific	Identify assumptions , evidence , and reasons behind conclusion
<b>Context</b>	Solve problem in a way scientific	Apply draft science

Material used \_ in study This ie material displacement heat . Displacement heat is displacement energy heat that occurs in objects that have temperature tall going to temperature object \_ more low . On the material This learn about 3 types displacement heat that is displacement heat in a way conduction , convection , and radiation , as well application displacement heat in life daily . On the material This , understanding is gained student need process skills and expectations No with through

memorize . The learning process is also based experience directly to students can involved in a way active in understand material so that learning will more meaningful .

Based on background behind that has been outlined before , then researcher interested For do study with title " The Influence of Learning Models Based Problem to Ability Literacy Science Participant Educate on the Material Displacement Heat Class V Elementary School " .

## METHODS

Type research used \_ in study This is study quantitative . Study quantitative is a process of discovery knowledge with using numerical data as tool For analyze information about what do you want We know ( Kasiram in Djollong , 2014). Method used \_ is *Pre Experimental* . Experimental design used \_ is *One Group Pretest-Posttest Design* . This design involve One given group \_ *pretest* , given *treatment* , and given *posttest* . Population in study This is all over student class V SDN Banjarkemantren 2 years 2022/2023 teaching , totaling 64 divided students into 2 classes that is classes VA and VB. Whereas sample in study This is participant educate VA class totaling 31 participants educate .

Instrument research used \_ in study This is sheet test choice double and sheet observation . Instrument the has validated expert and through calculation use help SPSS 25 *software* . Test sheet choice double made based on indicator literacy science as many as 10 questions . Data obtained through test choice double given \_ before and after applied learning model based problem . Researcher can know ability literacy science participant educate through learning models based problem from results test choice double . Besides that , for obtain additional data as supporting research data used sheet observation activity teaching teachers and sheets observation participant educate during activity learning taking place .

Procedure implementation study consists from a number of stage , at stage first thing to do is determine sample will \_ used as sample study . Stage furthermore is do a test run question in a population that does not used as sample study . Then results from testing \_ question done calculation For test validity , reliability , power differentiation , and level difficulty question . Next about that already tested and calculated can used For test literacy science in class sample study . Stage furthermore give *pretest* For measure ability literacy science participant educate before given *treatment* using a learning model based problem . Stage furthermore sample given learning model *treatment* based problem . Then , stage final sample given *posttest* For measure ability literacy science student after applied learning model based problem .

In technique Data analysis , normality test was carried out on *pretest* and *posttest* data . If the data declared normal then next with the t-test for test hypothesis as well as For know is There is average difference between *pretest* and *posttest* data . Besides that , done calculation achievement literacy acquired science \_ from results test ability literacy participant educate . In measure achievement literacy science , researcher use analysis form presentation of data through table that includes calculation of mean, medium, mode, minimum value , value maximum , and standard deviation . Furthermore done calculation percentage mastery from every indicator literacy science with formula as following :

$$Persentase = \frac{Skor\ Total}{Skor\ Maksimal} \times 100\%$$

After doing the calculations, it can be known the result including category like What with based on criteria following :

**Table 2.** Criteria Ability Literacy Science

Percentage (%)	Category
80-100	Very good
66-79	Good
56-65	Enough
40-55	Not enough
30-39	Fail

Besides done analysis achievement literacy science to results test participant education , is also done analysis teacher and participant observations educate . In measure implementation learning using a learning model based problem , researcher request observer assistance , namely teachers and friends colleague For observe activity teach researchers and activities participant educate . As for the method count percentage score sheet observation is as following :

$$S = \frac{R}{N} \times 100\%$$

Information :

S = Percent value sought

R = Amount score obtained \_

N = Number score maximum

**Table 3.** Criteria Percentage Observation

Percentage Value	Criteria
80– 100	Good Very
66 – 79	Good
56 – 65	Enough
46 – 55	Not enough
≤ 45	Fail

## FINDINGS AND DISCUSSION

### *Findings*

Study This implemented at SDN Banjarkemantren 2 with use sample VA class totaling 31 participants educate . Learning process done with using a learning model based problem . Based on research that has been carried out , the result data is obtained *pretest* and *posttest* in groups sample . the data obtained from results test ability literacy science participant educate with use test choice double . As for the results data research obtained \_ is as following :

#### 1. Results of Analysis of Scientific Literacy Achievement

This research was conducted in the VA class, totaling 31 students, by applying a problem-based learning model to the heat transfer material. The results can be seen in the following table:

**Table 4.** Ability Pretest and Posttest Results Literacy Science

Statistics	Pretest	Posttest
Sample Size	31	31
Maximum Score	55	100
Minimum Score	45	70
Average	31.61	85.16
Median	30	85
Mode	30	85
Standard Deviation	12,409	7,010

To find out the percentage of each scientific literacy indicator from *the pretest* and *posttest results* , you can see the following table.

**Table 5.** Percentage (%) Indicator Literacy Science Participant Educate

No	Scientific Literacy Indicators	Pretest		Posttest	
		Mark	Category	Mark	Category
1	Science Content Understanding Phenomena	54.83	Not enough	95.97	Very well
2	Science Process Identifying Scientific Problems	19.35	Fail	83.87	Good
3	Science Process Explain phenomena scientifically	26.12	Fail	81.29	Very well
4	Science Process Using scientific evidence	29.03	Fail	74.19	Very well
5	Science Context Solving problems scientifically	27.41	Fail	95.16	Very well

Based on table 4.2, it shows that the average percentage of scientific literacy indicators from pretest scores and posttest scores has increased. In the pretest score, the average was in the failing category. However, if you look at each value, the highest competency indicator is the indicator of understanding phenomena. As for the posttest scores , it shows that the average is in the category Good very . However If seen from every value , indicator literacy the highest science that is understand phenomenon .

2. Results of Teacher and Student Observation Analysis

a. Analysis of Teacher Teaching Observations using the Problem Based Learning Model

No	Observed aspects _	Score		
		P-1	P-2	P-3
1	Introduction	18	19	19
2	Orientation problem to participant educate	8	8	10

Organize participant educate For Study	13	15	15
Guide investigation individual nor group	12	13	15
Develop and present results work	12	12	14
Analyze and evaluate the solving process problem	11	12	14
3 Closing	12	12	15
<b>Amount</b>	<b>81</b>	<b>84</b>	<b>100</b>
<b>Percentage</b>	<b>77.14%</b>	<b>80%</b>	<b>95.23%</b>
	<b>Good</b>	<b>Good Very</b>	<b>Good Very</b>

The results of observations of teacher teaching activities show that each stage in the learning design and the stages of the problem-based learning model at each meeting experienced better improvement. At each meeting, the researcher as a teacher carried out all aspects contained in the observation sheet and all aspects were achieved in the good category

*b. Analysis of Student Activity Observations*

No	Observed aspects	Score			Aver age	Perce ntag e	Category
		P-1	P-2	P-3			
1	Reading ( searching information etc. )	25	26	23	<b>24.66</b>	<b>79.5%</b>	<b>Good</b>
2	Discuss something problem	22	23	25	<b>23.33</b>	<b>75.2%</b>	<b>Good</b>
3	Listen / pay attention teacher's explanation	25	22	28	<b>25</b>	<b>80.6%</b>	<b>Good Very</b>
4	Do test For solution problem	29	29	31	<b>29.66</b>	<b>95.6%</b>	<b>Good Very</b>
5	Discuss in work on LKPD together group	24	29	30	<b>27.66</b>	<b>89.2%</b>	<b>Good Very</b>
6	Communicate results discussion	27	25	28	<b>26.66</b>	<b>86%</b>	<b>Good Very</b>
7	Express / convey opinion	25	24	25	<b>24.66</b>	<b>79.5%</b>	<b>Good</b>
8	Ask the teacher or Friend	20	25	23	<b>22.66</b>	<b>73%</b>	<b>Good</b>
9	Behavior No relevant	12	10	2	<b>8</b>	<b>25.8%</b>	<b>Fail</b>
<b>Amount</b>					<b>684.4</b>		
<b>Average</b>					<b>76</b>		

The criteria for the success of student activities in scientific literacy are said to be good if at least 75% of students are actively involved in positive activities during learning. Based on existing research carried out , it can be said that the students' activities have been effective. This can be seen from Several activities observed during three meetings obtained an average percentage of student activity, namely 76% of students who were active in learning with the average being in the good category.



3. Normality Test Results

Testing data normality using Shapiro-Wilk in SPSS Version 25.0. The SPSS program analysis has a sig level of  $\alpha = 0.05$ . Data is said to be normally distributed if  $\text{sig} > \alpha$ . Meanwhile, if  $\text{sig} < \alpha$  then the data is said to be not normally distributed. The general results can be seen in the following table:

4. Table 6. Data Normality Test Results

<i>Sig.</i>	<i>Pretest</i>	<i>Posttest</i>
	0.193	0.262

Based on table 4.9, it can be seen that the pretest data is normally distributed because the sig value of 0.193 is greater than the significance constant value, namely 0.05. Likewise, the posttest data is normally distributed because the sig value of 0.262 is greater than 0.05.

5. T-test

Table 7. Paired Sample T-Test Results

Test	N	Descriptive statistics	Paired T-Test		
		<i>M (Std. D)</i>	<i>Q</i>	<i>Df</i>	<i>Sig. (2-tailed)</i>
<i>Pretest</i>	31	31.61 (12.5)	-27,370	30	0,000
<i>Posttest</i>	31	85.16 (7.1)			

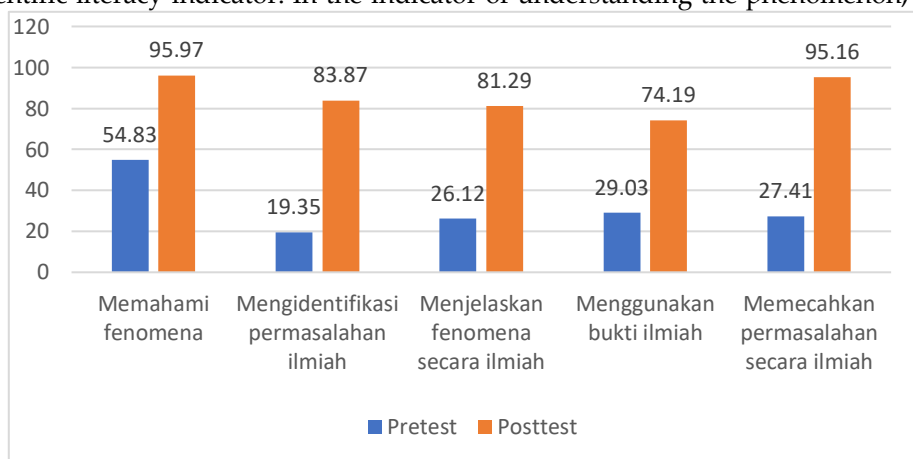
Based on table above \_ show difference The significant number between the average pretest and posttest scores is pretest = 31.61 and posttest = 85.16, meaning that learning using a problem-based model is able to increase scientific literacy ability test scores. Apart from that, it can be seen that the results of the paired sample t-test produce a significance value that is smaller than the  $\alpha$  value, namely  $0.000 < 0.05$ .

**Discussion**

Study This aim For describe influence of learning models based problem to ability literacy science participant educate on the material displacement heat fifth grade school base . On research This use One class as sample study with apply the learning model based problems in the learning process . After done research , obtained data results test ability literacy science .

Test results ability beginning Students' scientific literacy (pretest) before applying the problem-based learning model showed that the average value was 31.61. Meanwhile, the results of the analysis of students' scientific literacy ability tests after applying the problem-based learning model (posttest) showed that the average score increased by 85.16. The results of students' scientific literacy ability tests show that there was an increase before learning was given compared to after learning using a problem-based learning model. The existence of better results can be seen from each indicator of literacy ability science shown in the picture following This .

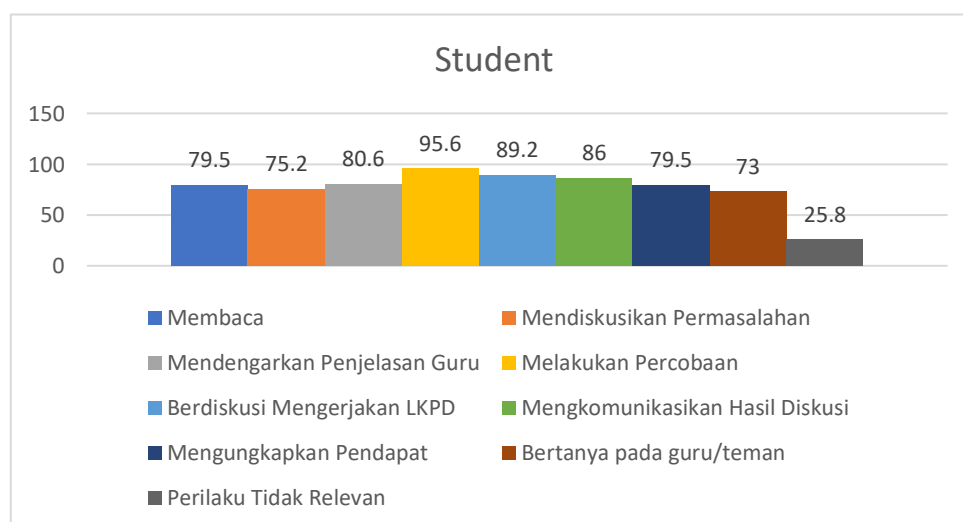
Based on Figure 1 , it can be seen that there has been a significant increase in each scientific literacy indicator. In the indicator of understanding the phenomenon, there was an



**Picture 1.** Diagram of Percentage Results of Scientific Literacy Indicators

increase of 41.14%. In the indicator of identifying scientific problems, there was an increase of 64.52%. In the indicator of explaining phenomena scientifically, there was an increase of 55.17%. In indicators using scientific evidence there was an increase of 45.16%. In the indicator of solving problems scientifically, there was an increase of 67.75%.

Apart from measuring scientific literacy based on written tests, researchers also measured scientific literacy based on observing student activities. The results of student observations can be seen in the picture below:



**Picture 2.** Percentage Diagram of Student Observation Results

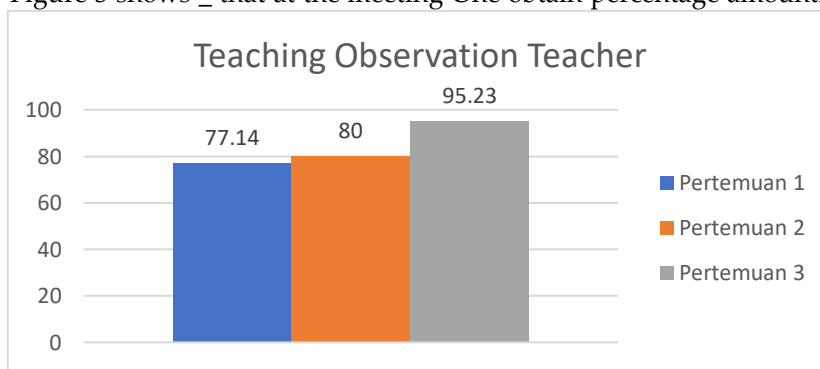
Figure 2 shows that the percentage of students who carried out reading activities during the three meetings was 79.5%. In reading activities, students are invited to read reading material from books or reading material provided by the teacher. This reading is also given as orientation before working on student worksheets (LKPD). Then the activity of discussing a problem obtained a percentage of 75.2%.

The percentage of listening/paying attention to the teacher's explanation was 80.6%. The percentage of activities carrying out experiments to solve problems was 95.6%. The percentage of discussion activities in working on LKPD with the group was 89.2%. The percentage of activities communicating discussion results was 86%. The percentage of activities expressing/conveying opinions was 79.5%. The percentage of activities asking teachers or friends was 73%, the percentage of irrelevant behavior activities was 25.8% .

From several activities observed during the three meetings, the average percentage of student activity was 76% of students who were active in learning. The criteria for the success of student activities in scientific literacy are said to be good if at least 75% of students are actively involved in positive activities during learning (Rusdi, 2018). Thus, the application of the problem-based learning model can increase students' activities in scientific literacy.

The problem-based learning model makes students experience a series of processes that support the achievement of scientific literacy ability indicators. The learning process took place over three meetings with five stages of the problem-based learning model. Based on observations that have been made on the teacher's teaching activities, it shows that each stage in the learning design of the problem-based learning model at each meeting experiences better improvements . This can be seen in the following image:

Figure 3 shows \_ that at the meeting One obtain percentage amounting to 77.14%. At



**Picture 3.** Percentage of Teacher Observation Results

the meeting this is still a teacher not enough in do apperception and motivation , apart That in do activity guide participant educate For give the teacher's response is still not enough maximum . Then at the meeting two obtain percentage by 80%. At the meeting This Already experience increase in each observed aspects , the average score given are in the category Good . Then at the meeting three obtain mark percentage amounting to 95.23%. At the meeting This experience more improvement \_ Good compared to meetings one and two . Teachers also have more Can control class and capable do every aspects of the learning model based problem with Good very .

There are stages carried out by the teacher in the learning process in accordance with five stages of learning model based problem . At stage first , that is stages orientation problem

. The teacher begins learning with give orientation problem about material displacement existing heat \_ in life daily . Participant students are also stimulated For look for related information \_ with given problem \_ from various source like from book as well as the internet. That matter can make participant educate feel motivated and enthusiastic For Study as well as dig knowledge as much Possible .

Stage second that is organize participant educate For learning , where at the stage this is the teacher forming member group . Furthermore participant educate given a worksheet Participant Educate (LKPD) later done together with member each group has determined by the teacher. Objective formed group in learning for participants educate can discuss and formulate the problem he got . With learning like that , participant educate more easy understand when feel difficulty to material or problems yet \_ understandable . Every member group is Friend peer make participant educate No feel clumsy For ask between fellow more friends \_ understand when There is things that haven't understandable so that activity Study can accomplished with Good .

Furthermore next with stages third that is guide investigation individual and group . At stage here , participants educate do discussion in his group For finish questions on the LKPD with utilise various literature . Besides it's on stage This participant educate do trial / experiment For prove exists displacement heat in life daily . Activity the make participant educate involved direct so that learning will become more meaningful . Besides That after do all learning processes during activity experiment , participants educate will more understand material No just on concept just but capable prove truth from material the (Fitriani, 2015) .

Stage fourth ie stage develop and present results work . At stage This participant educate prepare results existing experiments \_ obtained and presented the result to front class . At stage This can practice ability participant educate For do communication scientific , developing knowledge and responsibility answer in learning that has been done done .

Basically \_ learning based problem intended For develop independence learning and skills social participant educate . Ability social participant educate can developed through discussion and collaboration group , so participant educate trained For value friends , as well capable practice participant educate speak up front lots of people through presentation results Work group (Farisi, Hamid, & Melvina, 2017) .

Stage fifth that is analyze and evaluate the solving process problem . At stage this is what the teacher gave chance to participant educate from other groups for give response to results discussion group presenting. Participant educate given chance For put forward opinion they in accordance with their knowledge have. Besides That participant educate pushed For do evaluation or evaluate ability learn it Alone . After that the teacher gives strengthening to existing material studied.

For know what is the learning model based problem influential or No to ability literacy science participant educate so done testing normality and t-test. The results show normality of the data that *pretest* and *posttest* data has fulfills the normality test which is a prerequisite test before carry out hypothesis testing . *Pretest* and *posttest* data has distributed normally because sig value  $> 0.05$ . Because the data is normally distributed then fulfil criteria For t-test is used for test hypothesis study .

Testing hypothesis in research This using the *paired sample t-test*. The t-test results show mark significance (2-tailed) is  $0.000 < 0.05$ , so  $H_0$  is rejected and  $H_a$  is accepted , meaning there

is influence use of learning models based problem to ability literacy science participant educate . This matter in line with research conducted by ( Anton , 2022) stated that use of learning models based problem can increase ability literacy science participant educate .

Based on description discussion the so results obtained from activity learning with apply the learning model based problems with the material displacement heat there is influence to ability literacy science participant educate so this model can made A alternative for teachers to create effectiveness learning during activity Study teach specifically in effort increase ability literacy science participant educate .

## CONCLUSION

Based on results research and discussion , then can taken conclusion that learning model based problem influential to ability literacy science participant educate on the material displacement heat in class V school base . That matter can seen in the posttest data shows the average ability literacy science in each indicator including category Good . Result of data analysis shows that the pretest and posttest data have fulfills the normality test which is a prerequisite test before carry out a t-test. Test result normality obtained that the data is normally distributed because sig value . > 0.05. Furthermore done testing t-test with using paired sample t-test, the results show mark significant of 0.000 which means hypothesis alternative accepted .

Based on research that has been carried out , researchers provide suggestions for progress future research as following :

1. With this research, teachers are expected to follow up on learning as an effort to continue to improve students' scientific literacy skills because scientific literacy is important for students to have in the 21st century.
2. For future researchers, they can apply problem-based learning to other learning materials so that the impact of this model can be seen on different concepts.

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