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THE INFLUENCE OF THE PROBLEM BASED LEARNING MODEL ON STUDENTS' LEARNING OUTCOMES

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ABSTRACT

The aim of this research is to find out whether there is an influence of the Problem Based Learning (PBL) model on the learning outcomes of science students regarding plant morphology in class IV at Miftahul Jannah Banyuasin. The method used is quasi experimental design, a form of design that uses non-equivalent control group design. The population of this study was all fourth grade students. Meanwhile, the samples in this research were students in classes IV.A and IV.B with a total of 60 students. The data collection technique is carried out using tests. The data analysis technique used is the t test (independent t test). The results of the research show that the results of the hypothesis using the t-test on both groups with the results obtained, the tcount = 3.60 while the ttable value = 2045, thus tcount > ttable (3.60 > 2045) which means the working hypothesis (Ha) in This research was accepted, namely the results of science learning material on plant morphology for class IV students. This proves that there is an influence of the problem based learning model on the science learning outcomes of plant morphology material for class IV MI (Miftahul Jannah) Banyuasin students.

Keywords: Problem Based Learning Model, Learning Outcomes and Science Material, Plant Morphology.

1. INTRODUCTION

One of the most crucial components in developing human resources for development is education. Education must be seen as an absolute necessary for a nation to advance, just like other needs. The ability of an education to foster an intelligent national life and to successfully shape the education of a future generation of intellectual, morally upright, and charismatic young people can be used to judge the quality of an education. In order for students to develop to the fullest extent possible in accordance with their talents and abilities, it is imperative that educational systems be designed in a way that may foster an environment and learning process that are enjoyable, engaging, and demanding.

Studying is one method used to help students reach their potential. Aunurrahman (2012: 97) defines learning as an action that results in knowledge acquisition. Aunurrahman (2012: 99), on the other hand, defines learning as the process of altering a person's behavior or personality in response to particular experiences or practices. developing a system of creative learning. Learning success is

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significantly influenced by creativity. In order to achieve creative learning, there should be greater focus placed on the techniques or strategies applied during the teaching and learning process.

According to preliminary findings by researchers at Mitahul Jannah Banyuasin, Amir, M. Taufiq (2013: 3) states that the teaching and learning process is still teacher-centered, meaning that learning is still focused on the teacher so that students are not actively involved and tend to be passive. For the purpose of teaching Natural Sciences (IPA), teachers still employ the lecture format. This is evident when a teacher uses the lecture technique to teach Natural Sciences (Science) subjects from the start of the session to the finish, without employing any other learning model. Students are also expected to pay attention to what the teacher is explaining. Students are not actively involved in the learning process. When students work on assignments that don't turn out as well as they could, it impacts their learning outcomes. Low student learning outcomes can be caused by a number of things, including the adoption of less successful learning models and the lack of media in the teaching and learning process.

"Learning is a process that consists of two aspects, namely learning focused on what students must do, and teaching oriented on what the teacher as the provider of learning must do," state Asep Jihad and Abdul Haris (2013: 11). When teachers and students interact, these two elements will work together cohesively to create an activity. In order to have the best learning outcomes, this engagement needs to be as effective as feasible. To ensure that students meet the highest possible learning outcomes, teachers must be able to modify their lesson plans to fit various learning models, such as the problem-based learning model.

The author is interested in adopting the Probrem Based Learning Learning Model as a learning model that will be carefully examined in order to maximize student learning results, based on the background information provided above. The study "The Influence of the Problem Based Learning Model on Student Learning Outcomes in Science Content Plant Morphology Material Class IV at Miftahul Jannah Banyuasin" is based on this. From the background information provided above, several types of issues can be recognized, including: (1) Low student learning outcomes in subjects involving problem-based learning; (2) Learning that is still teacher-centered but not overly so; and (3) A lack of application of problem-based learning in education. The limitation of the problem that researchers may present is that student learning results are influenced by the appropriate learning model, and problem-based learning is one of these learning models. An engaging learning process can be produced with the use of the learning model. The impact of the problem-based learning paradigm on science learning outcomes related to plant morphology in class IV will be investigated in this study. Theme 3: Taking Care of the Living Subtheme 1: In my

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home environment: animals and plants / Third lesson / At Miftahul Jannah Banyuasin.

"Does the Problem Based Learning (PBL) model influence the learning outcomes (IPA) of students' plant morphology material in class IV Miftahul Jannah Banyuasin?" is the question that the researcher formulated in this instance. Based on the above-mentioned issue formulation, the purpose of this study is to determine if the issue Based Learning (PBL) model has an impact on science students' learning outcomes in class IV at Miftahul Jannah Banyuasin with relation to plant morphology.

2. LITERATURE REVIEW

Understanding Learning

Learning is a progressive process of behavior adaptation or modification, according to BF Skinner Wisudawati (2014: 31). Learning is a shift in the circumstances that lead to a reaction. Aunurrahman (2012: 97) defines learning as an action that results in knowledge acquisition. Aunurrahman (2012: 99), on the other hand, defines learning as the process of altering a person's behavior or personality in response to particular experiences or practices. Developing a system of creative learning. According to (Jaya, et al., 2019) Learning success is significantly influenced by creativity. In order to achieve creative learning, there should be greater focus placed on the techniques or strategies applied during the teaching and learning process.

According to a number of experts, researchers define learning as a process of altering behavior in order to produce a creative learning environment that aids in students' knowledge acquisition.

Recognizing Learning Outcomes

The creation of educational objectives within the national education system is based on Bloom's classification of learning outcomes, which are primarily cognitive in nature. Learning outcomes are the product of an interaction between teaching and learning activities, according to Dimyati and Mudjiono (2014: 4). Five categories of learning outcomes are proposed by Gegne Kurniawan (2014; 3), which are: 1) intellectual skills; 2) cognitive methods; 3) linguistic knowledge; 4) physical skills; and 5) attitudes. Cognitive skills, or knowing how to accomplish something, are learning outcomes.

According to the definition given above, learning outcomes are the conclusions drawn from learning activities in order to meet learning objectives. The following are some factors that affect learning results and the process:

a. Environmental factors, or external factors
   1) Natural Environment (i.e., the area where students attempt to live; pollution of the environment must exist there).
   2) The socio-cultural context, specifically how humans relate to one another as social beings Slameto is the source (Slameto 2013).
b. Inherent variables

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1) Physical Factors (Health Factors): In order to study effectively, a person must make sure that their physical health is protected by following the guidelines for study, rest, and exercise at all times,
2) Aesthetic Considerations
3) Cognition
4) Capacity to face and successfully adjust to new circumstances. Slameto is the source (Slameto 2013).

c. Attention: Students need to pay close attention to the subject they study in order to achieve high learning outcomes.
d. Interest: Students should have heightened brain activity focused on an object. a consistent propensity to observe and remember particular activities that one is passionate about. There's a thrill that comes with being noticed.
e. Talent: The capacity to learn. abilities that, with study and practice, will develop into true skills.
f. Reaching maturity
   A stage of development when the body's organs are prepared to perform new tasks. Learning and maturation are prerequisites for new advancement in these competencies.
g. Preparedness readiness to act or react. A person has this willingness when they are prepared to apply their newly acquired talents during the learning process. Source: Sudjana (2014, Sudjana).

Model of Problem-Based Learning

A learning model, according to Ngalimun (2014:25), is a conceptual framework that outlines systematic (regular) processes for allocating learning experiences and activities in order to meet learning objectives (learning competencies). A learning model, according to Joyce and Weil (Rusman, 2014: 133), is a scheme or pattern that may be applied to create learning resources, curriculum (long-term learning plan), and direct learning in a classroom or other setting. Meanwhile, a learning model is a conceptual framework that outlines methodical learning procedures to control students' learning experiences in order to attain specific targeted learning goals, according to Suprihatiningrum (2013: 145).

It is clear from the aforementioned experts' comments that a learning model is a framework or design that can be applied to teaching and learning activities in order to meet learning objectives.

Features of Education Models

Rusman (2014:136) lists the following features of the learning model.

1. Predicted on expert ideas of learning and education.
2. Having a particular purpose or objective in mind for education; the inductive thinking model, for instance, aims to foster inductive thought processes.
3. It can serve as a roadmap for enhancing in-class instruction. For instance, the synetic model is intended to boost creativity in composition classes.

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Al-Tabany (2014) claims that the learning model possesses four unique qualities that are absent from strategies, methods, or processes. The following are the learning model's unique qualities:

1) A cogent theoretical justification developed by the inventors or designers.
2) The foundation for considering what and how kids learn (the goals that need to be met).
3) The learning behaviors necessary for a successful model implementation.
4) The setting necessary for learning in order to meet learning objectives.

The learning model can be understood to have rational theoretical and logical characteristics prepared by its creators or developers, as well as the ability to serve as a guide for learning activities, specific learning objectives, and model components like syntax, reaction principles, social systems, and support systems. These conclusions are supported by the two expert opinions mentioned above.

Comprehending the Problem-Based Learning Framework

According to Wisudawati and Sulistyowati (2014: 89), Johns Hopkins University created problem-based learning, or PBL, to assist students in understanding concepts and problem-solving techniques by tying problems to real-world scenarios. as a setting in which students can develop their critical thinking and problem-solving abilities in addition to learning the fundamentals of the subject. Suherman (in Septiana 2013: 29) defines problem-based learning as follows: "The learning model of problem-based learning is intended as a pattern of interaction between students and teachers in the classroom which concerns strategies, approaches, methods, and learning techniques determined in the implementation of learning activities teach in class."

According to Jaya, et al., (2019) problem-based learning is a breakthrough in education because it actually maximizes the benefits of a methodical group or team work approach, enabling students to consistently hone, evaluate, and expand their critical thinking abilities.

It is clear from the previous explanation that Problem Based Learning (PBL) develops students' critical thinking skills by using real-world issues as teaching examples. In addition, the environment can teach students things or give them input in the form of problems and help, and the nerves in the brain work to decipher this information so that issues can be looked into, evaluated, and efficiently solved. The knowledge gathered from the surroundings will offer resources and information to help with comprehension, and it can serve as a roadmap for educational objectives.

Problem Based Learning (PBL), according to Kunandar, consists of the following steps:

(1) Introducing the issue to the class

At this point, the instructor explains the learning objectives, highlights crucial

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logistical requirements, and encourages students to participate in self-selected problem-solving exercises.

(2) Setting up the classroom for study
Instructors assist students in selecting and planning learning activities associated with that issue.

(3) Support individual or team research projects
Instructors push their pupils to conduct experiments, gather pertinent data, and look for answers and explanations.

(4) Create and deliver work products.
Instructors support students with the planning, preparation, and sharing of suitable work, including reports, videos, and models.

(5) Examine and assess how they solved the problem.
Instructors support students in thinking back on their research and the methods they employed.

By following these learning phases, students can refine their previous ideas and eventually start learning how to think critically, which naturally involves solving problems while taking into account both the actual circumstances in the surrounding environment and the situation at hand. Naturally, the 2013 curriculum supports the procedures involved in Problem Based Learning (PBL), which teaches students to solve problems using observations from their surroundings and provides evidence for these observations through a variety of activities.

Features of the Model of Problem-Based Learning

Amir listed the features of the PBL method, which are as follows:

1) Learning begins with the use of problems
The problems that are employed are typically presented as real-world challenges. Students are forced to study in new learning domains via problems.
2) Places a strong emphasis on self-directed learning, or independent learning.
3) Make use of multiple sources of information rather than just one. Finding, assessing, and applying this knowledge is crucial.
4) Education is cooperative, conversational, and team-based. Pupils engage in group work, peer teaching, work in groups, and give presentations.

Meanwhile, Baron (2013:1) lists the following as the features of problem-based learning:

1) Learning begins with the use of problems.
2) Real-world issues that are presented in an unorganized way are typically the difficulties that are employed.
3) Issues typically call for a complex viewpoint (several perspectives).
4) Students can learn in new areas of study thanks to problems.
5) Places a high value on self-directed, or independent, learning.
6) Make use of multiple sources of information rather than just one. Finding, assessing, and applying this knowledge is crucial.

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7) Cooperation, communication, and group education. Students collaborate in groups, communicate, engage in peer teaching, and give presentations.

a) Problem Based Learning (PBL) Model Learning Steps

According to Amir (2013: 24-26) there are 7 steps to the PBL (problem based learning) problem-based learning process as follows:

Table 1 PBL Model Learning Stages

Stage	Activity	Problem-Based Learning Process Behavior
1	Clarifying unclear terms and concepts.	Ensure that each member understands the various terms and concepts involved in the problem.
2	Formulate the problem	The phenomena in the problem require an explanation of the relationship between the phenomena
3	Analyze the problem	Members express knowledge related to what members already have about the problem. A discussion took place discussing factual information and information that members had in mind
4	Organize ideas systematically analyze them	The parts that have been analyzed are seen in relation to each other, grouped, which ones support each other, which ones contradict each other, and so on.
5	Seek additional information from other sources (outside the group discussion).	Formulate learning objectives that are linked to the analysis of the problems created.
6	Formulate learning objectives.	Look for additional information and determine where to look. Each member must be able to learn effectively on their own, in order to obtain relevant information.
7	Synthesize (combine) and test new information, and create reports for the class.	From the reports presented to other groups, the group will get new information.

Source : (Amir 2013)

Sugiyanto (2013: 159) suggests that there are five phases (stages) in the PBL learning model, which can be presented in the following table:

Table 2 Stages in the PBL Model

Phase	Teacher Behavior
Phase 1: Provide problem orientation to students.	Teacher discuss objective lesson, describe and motivate students to engage in problem-solving activities.
Phase 2: Organizing students to research.	Teachers help students to define and organize learning tasks related to their problems.
Phase 3: Assists with independent and group	Teachers encourage students to get information right,carr

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investigations.	y outexperiment, and search for explanations and solutions.
Phase 4: Develop and present results.	Teachers help students prepare appropriate results, such as reports, recordings, videos, models, and help students convey them to others.
Phase 5: Analyze and evaluate	Teachers help students to do
problem solving process.	reflection on their investigations and the processes they used.

Source: (Sugiyanto 2013)

According to Sanjaya (2011: 84) the advantages of the Problem Based Learning (PBL) Model are as follows:

1) Helping students to discover new knowledge.
2) Increasing student learning activities.
3) Helping students to understand problems in real life.
4) Helping students develop new knowledge and take responsibility for their learning.
5) Helping students to develop students' abilities to think critically.

Natural Sciences (IPA)

According to Carin and Sund Wisudawati (2014: 24) science is knowledge that is systematic and arranged in an orderly manner, generally applicable, and in the form of a collection of data resulting from observations and experiments. Science is rational and objective knowledge about the universe with all its contents Darmojo (in Usman, 2010: 2). Science is not only mastery of a collection of knowledge in the form of facts, concepts, or principles, but it is also a process regarding how to work, how to think, and how to solve problems. Science is learning based on principles, a process that can foster students' scientific attitudes towards science concepts through observation, discussion and simple investigations. According to Samatowa (2011: 2) states that science in elementary schools should provide opportunities to foster students' scientific curiosity. This will help them develop the ability to ask questions and look for answers based on evidence and develop a scientific way of thinking. Science is a subject that provides opportunities for critical thinking, science is taught by following the "discover it yourself" method and being faced with a problem (Samatowa, 2011: 4). Science trains children to think critically and objectively which is taught through experiments carried out by the children themselves, so science is not just a rote subject.

Based on the understanding above, researchers can state that science is an interrelated concept that has developed as a result of experiments in developing a curious attitude and encouraging children to think logically.

Plant Morphology Material

Research based on basic competencies in Class IV science subject matter, namely: Understanding the relationship between the form and function of animal and plant body parts. Like other living creatures, plants have certain parts. The parts of plants are leaves, stems, roots, flowers, fruit and seeds. Each part of the plant has a specific function. The three main parts of the plant body are roots, stems

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and leaves. Other parts of the plant can be considered as the main part that has changed. Flowers are considered changes from stems and leaves. Haryanto (2013: 13) Thorns are considered a change from leaves. Plant morphology is a science that studies various plant organs, including their parts, shape and function. Plants consist of three basic organs, namely roots, stems and leaves.

Based on the definition above, it can be argued that plant morphology is a concept that discusses the meaning of vegetative organs in plants, understanding the parts of stems, leaves, roots, flowers, etc.

3. METHODS AND PROCEDURES

The experimental method is the one employed in this study. Sugiyono (2018:72) defines experimental research procedures as those that are used to examine, under controlled circumstances, the effects of particular treatments on other subjects. In this study, a quasi-experimental design was employed. Non-equivalent control group design is a type of quasi-experimental research design that will be applied in this study.

The study was conducted in MI (Miftahul Jannah), which is situated in the South Sumatra Province's Banyuasi Regency's Talang Kelapa District on Jl. Prince Ayin Kel. Kenten Laut Village. The research will be conducted in November 2022, which is the odd semester of the 2022–2023 school year.

Along with ". All of the pupils in class IV Miftahul Jannah Talang Kelapa Banyuasin, or class IV Banyuasin, made up the population of this study. Class IV A and Class IV B are the two classes that make up Miftahul Jannah Talang Kelapa Banyuasin's Class IV. There are sixty-three students in Class IV overall. Purposive sampling is the method of sampling that was utilized in this study. Sugiyono (2016:67) describes purposeful sampling (comparison class) as a sample selection method with specific concerns. Creating a sample that is rationally representative of the population is the primary objective of purposive sampling.

The researchers employed multiple primary data collection methods in this quantitative study, including. Data were gathered through testing, structured interviews, documentation, and observation.

The (1) Normality Test is the data analysis method employed. Data normalcy is tested using the normality test as a factor. The data is appropriate for the following testing phase if it is normal. A test called normality seeks to quantify the data distribution within a variable or member. This is a Microsoft Excel normalcy test. (2) The test of homogeneity. The purpose of this homogeneity test is to determine whether or not many population variants are similar. This data homogeneity test is used to determine whether the conventional model should be used to the two posttest results of science learning outcomes on plant morphology material for class V students at MI (Miftahul Jannah). uniform or not. Formula F is the homogeneity test that researchers employ. (3) Hypothesis Testing. The stage of

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hypothesis testing can begin when the data from the class IV A and IV B posttest results have undergone the normality and homogeneity tests. The t test is used to test the hypothesis. T-test equation.In this study, the hypothesis is that if tcount is greater than ttable, Ha is accepted and if tcount is less than ttable, Ho is rejected. According to the criteria for hypothesis testing, namely if tcount > ttable, then Ho and Ha are approved if tcount is 3.60 and based on dk with 0.05. Therefore, class IV B students at Miftahul Jannah's plant morphology learning outcomes are greatly impacted by the use of the Problem Based Learning Model.

4. FINDINGS AND DISCUSSIONS

There is a significant influence using the Problem Based Learning Model on the science learning outcomes of plant morphology material for class IV B students at Miftahul Jannah. From research that has been carried out by researchers through observation, documentation, interviews and written tests. This can be seen from the students' pretest and posttest scores which experienced an increase.

Instrument Validation Data

By testing the validity of the test with a total of 7 questions, the table description is as follows.

Table 3 Question Validity Test Results

No	rcount	rtable	Question Validation Criteria	Conclusion
1	0.552	0.361	Valid	Can be used
2	0.517		Valid	Can be used
3	0.725		Valid	Can be used
4	0.582		Valid	Can be used
5	0.721		Valid	Can be used
6	0.842		Valid	Can be used
7	0.654		Valid	Can be used

(source: Microsoft Excel Program Data Processing)

The table above shows below 7 essay questions with r values$_{count}$< r table as many as 7 questions were declared valid. The rtable value is obtained from the r value of the moment product with a total of 30 students and a significance level of 0.05%.

Table 4 Reliability Results

rproblem	rtable	Status
0.485	0.361	Reliable

(source: Microsoft Excel Program Data Processing)

Based on the table above, it can be seen that the reliability value for class VA is 0.485 > from r table 0.361, the N value (number of students) is 30 students with a significance level of 0.05. So it can be concluded that the questions above are declared reliable.

Descriptive Statistics Test Results

Based on the calculations, the data obtained shows an increase in student learning outcomes, which is described in the following table:

Table 5 Recapitulation of Student Learning Outcome Values Before Pretest Treatment

No.	Information	Experimental Class	Control Class
1.	Maximum Value	90	85
2.	Minimum Value	55	50

The final data analysis was carried out to process the data collected from the learning outcomes data of experimental and control

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class students. With the aim of accepting or rejecting the hypothesis proposed by the researcher, this final data analysis also aims to determine the condition of the experimental class and control class after being treated with the Conventional Model. This final data analysis is based on the posttest scores given to experimental and control class students. List of values as follows:

Table 6 Posttest Results for Experimental Class and Control Class

No	Experimental Class		Control Class	
		Mark		Mark
1	A-Z	80	AN	70
2	AH	70	CHAPTER	80
3	A.M	90	BRK	70
4	AK	100	ICE	80
5	AD	70	FAH	70
6	B.A	90	HR	70
7	DA	70	H.N	70
8	IAP	90	IAR	80
9	KN	80	K.K	90
10	M.S	80	KRA	90
11	MAA	80	M.A	70
12	YOUR	80	M.F	60
13	MSA	70	M.F.A	60
14	MTD	80	MFI	90
15	MZ	100	M.F.A	60
16	MTN	90	MAR	60
17	MFF	80	MMA	70
18	MH	70	MRA	80
19	MR	80	MVR	90
20	NOW	90	MPS	90
21	NON	70	N.J	70
22	P.A	100	NS	80
23	RNS	90	N.P	90
24	RKR	90	NRD	90
25	R.I	90	RDAs	80
26	R.A	90	RDR	90
27	SR	90	S.A	90
28	BC	80	SZ	90
29	SZR	70	TA	80
30	SZ	90	YES	70
	Amount	2500	Amount	2330
	Average value	83.33	Average value	77.66
	The highest score	100	The highest score	90
	Lowest value	70	Lowest value	60

(source: Microsoft Excel Data Processing Program)

Normality test

For science learning results, plant morphology material in the control class in class IV A consisted of 30 students with an average of 77.66 with the highest score being 90 and the lowest score being 60. So there were 4 students who got the lowest score and there were 9 students who got the highest score. . Based on the data calculations above with a Km value of 0.0543, this price is located between (-1) and (1). So it can be concluded that the posttest data is normally distributed.

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Homogeneity Test

This data homogeneity test was carried out to find out whether the two posttest results of science learning results on plant morphology material for class V students at MI (Miftahul Jannah) who were treated using the Conventional Model had homogeneous variance or not. The homogeneity test that researchers use is the F formula.

1. Largest and Smallest Variance

   Fcount $= \frac{Varians\ Terbesar}{Varians\ Terkecil}$

   $= \frac{91.95402}{1150575}$

   = 0.799201

2. Compare Fcount and Ftable values

   Formula : db_1 = n – 1 = 30 – 1

   Db_2 = n – 1 = 30 – 1

So, the significance used is a = 0.05, so to obtain the Ftable value using the formula.

Ftable = $F(\alpha)(dk_1, dk_2)$

= F0.05 (29.29)

= 2,045

Based on the data from the data homogeneity test calculations above, it can be concluded that the value of Fcount < Ftable 0.799 < 2.045 means that the variance data is homogeneous. Can be continued with the homogeneous test.

Hypothesis testing

After carrying out the normality test and homogeneity test of the data from the results of the class IV A and IV B posttests, the hypothesis testing stage can be carried out. In testing the hypothesis using the t test. T test formula. The hypothesis in this research is that Ha is accepted if tcount > ttable and Ho is rejected if tcount < ttable. If tcount is 3.60 and based on dk with 0.05 in accordance with the hypothesis testing criteria, namely if tcount > ttable then Ho and Ha are accepted. So there is a significant influence using the Problem Based Learning Model on the science learning outcomes of plant morphology material for class IV B students at Miftahul Jannah.

5. CONCLUSION

Based on research on the influence of learning models*problem based learning*on the results of science learning on plant morphology material for class IV MI (Miftahul Jannah) students can be concluded as follows: From the results of the research and discussion that has been carried out, the researcher draws the conclusion that the results of the research show that there is an influence of the problem based learning model on science learning outcomes on plant morphology material. MI class IV students (MIftahul Jannah), can be seen from the hypothesis results using the t-test on both groups with the results obtained, tcount = 3.60 while ttable value = 2045, thus tcount > ttable (3.60 > 2045) which means the working hypothesis (Ha) in this research is accepted, namely the results of science learning material on plant morphology of class IV students. This proves that there is an influence of the problem based learning model on the science learning outcomes of plant morphology material for class IV MI (Miftahul Jannah) Banyuasin students.

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