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Original Research Article

Influence Learning Model PBL (Problem Based Learning) on the Activities and Student Results

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Abstract

Teachers as educators and teachers in order to achieve the mission of education required to further improve its expertise and creative in implementing the learning process in the classroom. As educators and teachers, teachers must have the ability to tackle the problem of learners in a sustainable manner through approaches, methods, and techniques as well as appropriate learning strategies that can increase the potential of the learners optimally. The subject is related to the Natural Sciences (IPA) the learning process carried out by the science teachers are still not actively engage learners and able to think critically. The learning model PBL (Problem Based Learning) offers to teachers in the learning process so that learners are motivated to have the ability to suss out problems in the real situation.

Keywords: Learning model, activities and learning outcomes.

INTRODUCTION

Preliminary

Education is an important thing is good for an individual, a community or a nation. With the nation's future and education of the country will have an orientation in accordance with the objectives of the nation and the state. Even many countries that make the legislation on education. Due to the good education system, will create good education graduates anyway. In addition, graduates of this are to be the leader and the nation's future, so if education in a nation to thrive, then it is possible if the nation were to be growing as well.

The quality of education in Indonesia is influenced by several factors, including the education system, the educational budget, educational facilities, curriculum, quality of teaching, the professionalism of teachers and education management. The professionalism of teachers and education management is believed to be a critical success factor and the quality of education in a school [1].

In this regard, the teacher as the spearhead in achieving the mission of education required to be a professional, innovative and perspective in carrying out the task of learning. Teachers should be able to overcome the problem of student learning continuously through the approach, method, and technique or learning strategies that attract so as to develop the students' potential optimally [2].

In tune with the task of teachers in teaching science subjects (Natural Sciences) is a systematic and structured knowledge on a regular basis, apply the general (universal), and a collection of data of observation and experiment [3]. Suastra in LU Ali stated that learning science is an ideal way to gain the competencies (skills, preserve attitudes, and develop mastery of concepts related to everyday experience) [4].

[1]Prasetyaningsih and Insih Wilujeng, "Quality Analysis Classroom Management Science Learning at SMP SSN in Pati District", the JPPI (Journal of Science Research and Education), Vol. 2, No. 2, 2016, 148

[2]Yusri Arsiyati, "Improved Learning Outcomes Student Class IX Science Through Cooperative Learning Jig Saw At MTs Al Ikhlas Tanuraksan Kebumen in the school year 2011/2012" in the journal Radiation, Vol. 1, No. 1, 2012, 1

[3] Gemi Nastiti and Achmad A. Hinduan, "Learning science Integrated Model for Improving Motivation and Learning Outcomes on Energy Highlights in Smp Negeri Purworejo, Central Java", Vol. 4, No. 1 and 2, 2012, 1

[4]LU Ali, "Management Science Lesson Judging from Itself Science at junior high school in East Lombok

IPA is basically the study of nature, natural detection, and causal occurrence of these natural phenomena. IPA related to the natural way of finding out about a systematic way, so that science is not just a collection of knowledge in the form of facts, concepts or principles but also a process of discovery. Directed inquiry science teaching so that learners can understand the nature of science, namely: products, processes, attitude, and application.

Speaking of learning outcomes, Based on the results of the PISA (Program for International Student Assessment) in 2012 showed that the ability of science literacy of students in Indonesia is still at the lower end which ranks 64 of 65 countries. Indonesia gained a total score of 382 scientific competence of the average score of 501. The results of PISA 2015 tests and evaluation of mastery of students in Indonesia remains low. Scores achievement of Indonesian students to science is ranked 62 with a score of 403 from 70 countries evaluated. Based on the analysis of the PISA test results and evaluations showed that learning science students in Indonesia is not yet practically useful in people's lives [5].

The next report is from the data obtained from the results of learning science subjects teachers indicate that the UAS (Deuteronomy Final) odd, there are 70% of students who scored below the KKM (Minimum completeness criteria) science subjects, namely 75. Of all the grain material science class, students find it difficult to understand the material body systems. Especially on the material of the human respiratory system. KD (Basic Competence) on this matter which analyzes the respiratory system in humans, understand the disorders of the respiratory system as well as efforts to maintain the health of the respiratory system [6]. Based on KD (basic competencies) The student has not been able to achieve the learning objectives. During this time when the human respiratory system of learning materials, students only get work assignments LKS (Student Worksheet) that the answer is already available in the LKS reading. This makes students less able to critism think. In the implementation of science teaching, the teacher should be able to enable students and reduce the tendency of teachers who dominate the learning process. So that there is a change in terms of learning science teaching is centered on the teacher becomes student-centered learning. Teachers only act as a motivator and facilitator.

Based on the above issues, required an innovative learning model that is able to activate students in implementing various learning activities especially in the matter of the human respiratory system that can provide meaningful learning experiences for students. One model of learning in accordance with the above problems the model of learning PBL (Problem Based Learning).

PBL (Problem Based Learning) helps learners to develop thinking skills and problem-solving skills. According to Tan in Rusman problem-based learning is an innovation in learning because they in PBL (Problem Based Learning) students' thinking skills truly optimized through group work or team systematically, so that students can empower, sharpening, test and develop the capacity to think on an ongoing basis [7].

It is also reinforced by research made by Dwijowati Asih Saputri and Selfy febriani in the title Effect of PBL (Problem Based Learning) on the ability Troubleshooting Students At Lesson Biological Material Environmental Pollution Class X MIA SMAN 6 Bandar Lampung which states that the value of average pretest the experimental class is 42.09, while the average posttestnya is 74.68. In the control group the average value of 44.18 pretest and posttest values with an average of 63.24. T-test results showed t count> t table (2.42> 1.98) it shows that H0 rejected and H1 accepted. So [8].

Based on the above researchers interested in conducting experiments with the theme: Effects of Learning Model PBL (Problem Based Learning) on the Activities and Student Results on Human Respiratory System material at SMPN 1 Sumbergempol.

The formulation of the problem in this research is as follows: Did the influence of PBL learning model(Problem Based Learning) to the students' learning activities? Is there any effect of PBL teaching model (Problem Based Learning) the results of student learning? and, Is there any effect of the learning model PBL (Problem Based Learning) on the activity and student learning outcomes?.

LITERATURE REVIEW

Itself learning IPA

regency" in the e-Journal Ganesha Education University Graduate Program IPA Program ", Vol. 3, 2013, 2

[5] Agnes Ariningtyas et al, "Effectiveness of Student Worksheet Etnosains Loaded Material Hydrolysis Salts for High School Students Improve Science Literacy", in JISE (Journal of Innovative Science Education), Vol. 6, No. 2, 2017, 187

[6] Kemendikbud, Model School Syllabus Subjects SMP / MTs (SMP / MTS), (Jakarta: Ministry of Education and Culture, 2017), 24

[7] Rusman, Models of Learning, (Jakarta: King Grafindo Persada, 2013), 229

[8] Saputri Dwijowati Asih and Selfy febriani "*Influence Model Problem Based Learning (PBL) Problem Solving Ability Of Students In Biology Subject Matter Pollution MIA Class X SMAN 6 Bandar Lampung*"in BIOSPHERE Tadris Journal of Biology, Vol. 8, No.1, 2017, 40

Natural Sciences (IPA) is a systematic and structured knowledge on a regular basis, apply the general (universal), and a collection of data of observation and experiment [9]. According Wahyana in Trianto IPA is a collection of knowledge systematically arranged, and in common usage is limited to natural phenomena. Development is not only characterized by a collection of facts, but by the scientific method and scientific attitude [10]. From these explanations it can be said that science is the systematic collection theory, its application is generally limited to the phenomena of nature, was born and developed through scientific methods such as observation and experimentation as well as demanding scientific attitudes such as curiosity, open, honest and so on.

IPA is basically the study of nature, natural detection, and causal occurrence of these natural phenomena. IPA related to the natural way of finding out about a systematic way, so that science is not just a collection of knowledge in the form of facts, concepts or principles but also a process of discovery.

The learning model PBL (Problem Based Learning)

The learning model PBL (Problem Based Learning) or a problem-based learning instructional model designed to solve the problems presented. PBL is an instructional model that serves a variety of problematic situations authentic and meaningful to the students, which can serve as a springboard for investigation and inquiry [11]. Problem-based learning (Problem Based Learning) will help learners to develop the skills to think and solve problems, learn the roles of adults, and become independent learners. PBL (Problem Based Learning) helps learners to develop thinking skills and problem-solving skills. According to Sadia through the application of learning models, PBL (Problem Based Learning) students will learn to evaluate, identify, collect information, and work together to evaluate a hypothesis based on the data that has been collected [12].

Learning Activity

Learning activities can be defined as a variety of activities given to learners in the teaching and learning situation [13]. This learning activity is designed to enable students to acquire the specified charge, so that the various goals set, especially the aims and objectives of the curriculum, can be achieved.

Many kinds of activities that can be done by children in schools, not just listened and recorded as prevalent in traditional schools. Paul B. Diedrich in Nasution made a list of 177 kinds of student activities, among others [14]: a). Visual activities (13) such as reading, watching images, demonstrations, experiments, the work of others and so on, b). Oral activities (43) as stating, formulating, ask questions, make suggestions, express opinions, conduct interviews, discussions, interruption, etc., c). Listening activities (11) as dictations, conversations, discussions, music, speech, etc., d). Writing activities (22) as write stories, essays, reports, tests, questionnaires, copying and so on, e). Drawing activities (8) such as drawing, graphics, maps diagrams, patterns, f). Motor activities (47) like to experiment, make constructions, models, refit, playing, gardening, raise animals, and so on, g). Mental activities (23) as perceiving, remembering, solving problems, analyzing,

Of course, these activities are not separated from each other. In any event motorist sometimes mental activity and is accompanied by a certain feeling. In each lesson to do various activities.

Learning Outcomes

Assessment of learning outcomes is the process of giving value to the results of learning achieved by students with criteria-specific criteria [15]. Learning outcomes are the abilities of the students after receiving their learning experience [16]. The results of learning activities marked by a change of behavior in a positive direction relatively permanent in those who learn, The results of student learning is essentially a change in behavior. Behavior as a result of learning in a broad sense covers the fields of cognitive, affective, and psychomotor.

Cognitive with respect to the mental process that starts from the level of knowledge up to the level to a higher level, namely evaluation. This cognitive domain consists of six aspects, namely the level of knowledge or memory (knowledge), the level of understanding (comprehension), the rate of application (application), the level of analysis (analysis), the rate of synthesis (synthesis), and the level of evaluation

[9] Gemi Nastiti and Achmad A. Hinduan, "Learning science Integrated Model for Improving Motivation and Learning Outcomes on Energy Highlights in Smp Negeri Purworejo, Central Java", Vol. 4, No. 1 and 2

[10] Trianto, Integrated Learning Model, (Jakarta: PT Earth Literacy, 2012), 136

[11] Arends, Richard I, Learning to Teach Seventh Edition, (New York: The McGrwa- Hill Companies, Inc., 2007), 380

[12] I Wayan Sadia, Science Learning Models Constructivistic. (Yogyakarta: Graha Science, 2014), 68

[13] Oemar Hamalik, Fundamentals of Curriculum Development, (Bandung: Youth Rosdakarya, 2013), 179

[14] S. Nasution, Didactic Principles of Teaching, (Jakarta: PT Earth Literacy, 2012), 91

[15] Nana Sudjana, Teaching and Learning Outcomes Assessment, (Bandung: Youth Rosdakarya, 2005), 3

[16] Ibid. 22

(evaluation) [17]. Both the first aspect is called a low-level cognitive next and fourth aspects include high-level cognitive.

Effective with regard to attitudes and values. Some experts say that a person's attitude can be foreseen amendments if someone has had a high level of cognitive mastery. There are several different categories of affective as a result of learning. Katgori starting from the basic level or simple to complex levels. the affective domain consists of five aspects, namely reception (receiving / attending), response or reaction (responding), valuation (valuing), organization, and characteristics value (internalization) [18].

Psychomotor sphere the outcomes of learning skills and ability to act. The results appear in the form of learning psychomotor skills (skills) and the ability to act individually. There are six aspects of psychomotor domains, namely [19]: a). Reflex (skills on an unconscious movement), b). Skills basic movements, c). Perceptual abilities, including visual, differentiate, discriminate auditory, motor, etc., d). Physical ability in the field, such as strength, harmony, and precision, e). Movements skills, ranging from simple skills to complex skills, f). Communication capabilities with respect to non-decursive as expressive and interpretive movement.

All three domains mentioned above becomes the object of assessment of learning outcomes. Among the three realms, the realm cognitive most widely assessed by teachers at the school as it relates to the ability of the students to master the content of teaching materials. Furthermore, it can be concluded the learning outcomes are the results or level of ability that has been achieved by students after attending the learning process in a certain time which includes affective, cognitive and psychomotor.

RESEARCH METHODS

This research is experimental research. Based on the objectives to be achieved in this research is to determine the influence of the learning model PBL (Problem Based Learning) on the activity and student learning outcomes in the human respiratory system, This research is classified into quasi-experiment research. The study design used in this study was*Quasi-Experimental Design*(Nonequivalent Control Group Design). In this design, there is a pre-test before being given treatment and post-test after being treated. Thus the results of the treatment can be determined more accurately because it can be compared with the situation before the treated and after being treated.

The population in this study were all students of class VIII SMPN 1 Sumbergempol totaling 367 students, while the sample of this research is class VIII F-number of 32 students consisting of 19 male students and 13 female students as an experimental class and class VIII G number 31 consisting of 17 male students and 14 female students as the control class. Sampling is done by simple random sampling technique or randomly with consideration of these two classes have similar abilities. Equality is done by analyzing the results of UAS semester students. Data collection techniques used include a questionnaire or questionnaires, tests, and documentation.

In this study used data analysis, there are three kinds, namely test instruments, test preconditions, and hypothesis testing.

Test Instruments

Test instruments in order to meet the accuracy and reliability must go through two requirements, namely the validity (validity) and reliability (reliability). The validity of the test is set to determine the quality of the test in relation to measuring capability that should be measured. Reliability is used to indicate the measurement results of an instrument that is not bias or error-free measurement, thus ensuring a consistent and stable measurement (unchanged) in the period and the various items or points in the instrument [20].

Test Prerequisites

Prerequisite test conducted in this study is the homogeneity test and test for normality. Homogeneity test is done to see two samples used (the experimental class and control class) whether it has the same ability level. While formality test data is intended to show that the sample data came from a normally distributed population.

Hypothesis Testing

Data obtained from the measurement results are then analyzed to determine whether the results are consistent with the hypothesis expected. To determine the effect of learning model PBL (Problem Based Learning) on the activity and student learning outcomes, researchers use Statistical parametric t-test (t-test) and test *The multivariate analysis of variance* (MANOVA).

Research findings

After analyzing the research data, the next step is to describe the results of these studies in the form of a table showing the effect of the use of the learning model PBL (Problem Based Learning) on the activity and student learning outcomes in science subjects material human respiratory system ". Table

[17] Hamzah B. Uno and Satria Koni, Assessment of Learning, (Jakarta: PT Earth Literacy, 2012), 61
[18]Sudjana, Outcomes Assessment Process ..., 29
[19]Ibid. 31

[20]Puguh Suharso, Quantitative Research Methods for Business and Practical, (Jakarta: PT Index, 2009), 106

recapitulation of the research results can be seen in Table-1 as follows:

Table-1: Recapitulation of Research Findings

No.	The research hypothesis	Research result	criterion Research	interpretation	Conclusion
1	**2**	**3**	**4**	**5**	**6**
1.	The influence of the use of the learning modelPBL (Problem Based Learning) on learning activities	difference =3.32	Experimental class> class control	The hypothesis is accepted	There is the effect of using learning modelPBL (Problem Based
1	**2**	**3**	**4**	**5**	**6**
	students science subjects matter of the human respiratory system				*Learning*) to the students' learning activities in science subjects matter of the human respiratory system the experimental class and control class.
2.	The influence of the use of the learning modelPBL (Problem Based Learning) on student learning outcomes in science subjects matter of the human respiratory system	difference =8.22	Experimental class> class control	The hypothesis is accepted	There is the effect of using learning modelPBL (Problem Based Learning) on student learning outcomes in science subjects matter of the human respiratory system the experimental class and control class
3.	The influence of the use of the learning modelPBL (Problem Based Learning) on the activity and student learning outcomes in science subjects matter of the human respiratory system	values and post-test questionnaire has a significance level of 0.000 <0.05	-	The hypothesis is accepted	There is the effect of using learning modelPBL (Problem Based Learning) on the activity and student learning outcomes subjects
1	**2**	**3**	**4**	**5**	**6**
					IPA material human respiratory system in the experimental class.

DISCUSSION

Effect of PBL Learning Model(Problem Based Learning) to the Student Activities

From the results of test calculations t, get the value of t = 4,167 with a significance level of 0.000 and t table =1,670(Significance level of 5%). The test results can be deducedt> t table, then Hα H0 accepted and rejected and no influence PBL learning model (Problem Based Learning) to the students' learning activities in science subjects matter of the human respiratory system.

If the result is the better known application of PBL teaching model (Problem Based Learning) to the learning activities of students, the discussion in accordance with Cronbach exposure. According to Cronbach, "learn the best is to experience and the experience that students are using the five senses" [21]. In addition, a prominent education stream naturalism also argued, "all knowledge to be gained by observation alone, his own experience, my own investigations, with tools made by himself, with his own work, and form its own" [22].

From the expert opinion then the stronger statement that PBL learning model (Problem Based Learning) is a suitable model for improving student learning activities, due to the implementation of this model requires students to be active in learning. Students will acquire a problem and students also will solve these problems independently. By learning modelPBL (Problem Based Learning) students will have the ability to build his own knowledge through learning activities [23]. Student activity will be very influential in the learning process in the classroom.

Effect of PBL Learning Model(Problem Based Learning) to the Student Results

Based on t-test results from two problem formulation in accordance with what was expected, the details obtained t =4.146 With a significance level of 0.000, while t table = 1,670 (Significance level of 5%) it can be seen that t> t table, Then it is accepted and H0 Hα rejected. So that the conclusions obtained are no influencePBL learning model (Problem Based Learning) on student learning outcomes in science subjects matter the human respiratory system.

The results of the second discussion it was also in accordance with the presentation of the experts that the factors that are beyond the learners (external) that affect student learning outcomes are the environmental factor a school that is adequate for the situation of learners, such as how to teach, the attitude of teachers, curriculum or materials will be studied, inadequate learning materials, evaluation techniques that are less precise, less comfortable learning space, and so on [24].

[21] Sumardi Suryabrata, Educational Psychology (Jakarta: King Grafindo Persada, 2008), 231

[22] S. Nasution, Didactic Principles ..., 86

[23] Shoimin Aris, 68 Innovative Learning Model in Curriculum 2013 (Yogyakarta: Ar-Ruzz Media, 2014), 132

[24] Ngalim Purwanto, Evaluation of Learning, (Yogyakarta: Learning Library, 2009) 130-132

So the selection of appropriate learning models greatly affects student learning outcomes.

Based on the above evidence can be interpreted that learning model (Problem Based Learning) significantly better in improving learning outcomes IPA because PB learning model (Problem Based Learning) is learning to depart from problems related to the real life of students. So that more students can grasp and understand the concept of matter itself. Other than that, the PBL learning model (Problem Based Learning) make students more independent in learning science.

The results of field research show that student learning is more actively involved in the process of solving the problem. While in terms of student social will be more discussion with other students. So that they cooperate well and sportsmanship. Some experts opinion about learning theories related to learning model (Problem Based Learning); Piaget, Vygotsky with constructivism Piaget in Rusman more emphasis on aspects of the stages of the learning process while Vygotsky's intellectual development is more emphasis on the social aspects of learning. relation to learning model (Problem Based Learning) is in terms of linking the new information to the cognitive structure that has been owned by the students through activities learn to define social interaction with other friends [25].

In previous studies conducted by Octavian Eduardo Purwandi titled "The Effect of Problem Based Learning on Learning Outcomes in Sub Matter Air Pollution In*SMPN 1 Seberuang, Kapuas Hulu*". From the results of this study that *there are differences in students' science process skills are taught using Problem Based Learning to teach with conventional learning models in the sub-material water pollution. result effect size indicates that the learning model Problem Based Learning to give the effect of 39.44% of the student learning outcomes in sub contamination at SMPN 1 Seberuang, Kapuas Hulu [26].*

From it can prove that the PBL learning model (Problem Based Learning) a student is unable to *science process skills in the classroom*,

Influence Learning Model PBL (Problem Based Learning) to the Student Activities and Learning Outcomes.

Based on the results of multivariate analysis of variance test(MANOVA)of the three problem formulation in accordance with what is expected, that the relationship between the value of questionnaires and learning outcomes by having significance level of 0.000 <0.05. From the description, it can be concluded that "the influence of the learning model PBL (Problem Based Learning) on the activity and student learning outcomes in science subjects matter the human respiratory system.

CONCLUSION

Based on the formulation of the problem and hypothesis, and the results of the study are based on data analysis and hypothesis testing, then the conclusions that could be addressed in this study, as follows:

There is an effectPBL learning model (Problem Based Learning)to the students' learning activities in science subjects matter of the human respiratory system, This is indicated by = 4167 with a significant level of 0.000 and t table =1,670(Significance level of 5%). The test results can be deducedt> t table, then Hα H0 accepted and rejected and no influencePBL learning model (Problem Based Learning) to the students' learning activities in science subjects matter of the human respiratory system,

There is an effect PBL learning model (Problem Based Learning) on student learning outcomes in science subjects matter of the human respiratory system, This is indicated by = 4.146 With significance level of 0.000, while t table = 1,670 (Significance level of 5%) it can be seen that t> t table, Then it is accepted and H0 Hα rejected. So that the conclusions obtained are no influencePBL learning model (Problem Based Learning) on student learning outcomes in science subjects matter the human respiratory system.

There is an effect PBL learning model (Problem Based Learning) on the activity and student learning outcomes in science subjects matter of the human respiratory system, This is indicated by the relationship between the experimental class and control class to the value of questionnaires and post-test has a significance level of 0.000 <0.05. From the description above it can be concluded that "there is the effect of using the learning modelPBL (Problem Based Learning) on the activity and student learning outcomes in science subjects matter the human respiratory system.

[25] Rusman. Models of Learning: Developing a Professional Teacher, (Jakarta: Rajawali Press, 2013), 244

[26] Octavian Eduardo Purwandi, Thesis, "The Effects of Problem Based Learning on Learning Outcomes in Sub Matter Air Pollution In *SMPN 1 Seberuang, Kapuas Hulu*"(University Tanjongpura Pontianak, 2017)