The Influence of the Problem Based Learning Model Assisted by Media Bio Briquettes to Students ' Science Process Skills

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ARTICLE INFO	ABSTRACT
Keyword Problem Based Learning Model, Bio Briquettes Media, Science Process Skills	Moment This Still there are teachers who do activity science learning only limited convey concept. Should more science learning emphasis on process skills, consequently student only just learn material without own process skills, so science process skills student Still less. Use of *Problem Based Learning* models assisted by bio- briquette media is one possible solution done For solve problem the. Research This aim For now the influence of the *Problem Based Learning* model assisted by bio- briquette media to science process skills student class IV SD Negeri Borobudur 1. Method research used in study This that is experiment with use design *pre-experimental one group pretest-posttest*. The sample used in study This as many as 20 students class IV A Borobudur State Elementary School 1. The sampling technique used is *purposive sampling*. Instruments used in study This that is *pretest-posttest* and sheets observation student. Results obtained in study This show that there is the influence of the *Problem Based Learning* model assisted by bio- briquette media to science process skills student. it proven that the average result of the pretest value is 40.43 < posttest 79.53. Next, test *the paired sample t-test* obtain results significance (2 *tailed*) 0.000<0.05, so can concluded that the *Problem Based Learning* model assisted by bio- briquette media influential significant to science process skills student.

Introduction

Changing times forced all field for follow changes that occur, one of them that is field education. Education is important aspect in development a country, where education used as means for increase quality source Power human. See importance education, the Indonesian government is trying increase quality education in Indonesia like increase budget education, giving counseling to the teacher, give standard minimum pass, and do improvement curriculum. One effort made government that is improvement curriculum in Indonesia. Moment this, Indonesia is applying curriculum independent. Curriculum independent interpreted as design learning that provides chance to student for Study with calm, relaxed, fun, free stress and free pressure, as well for show talent experience student. On the curriculum independent, system learning will have held with different shades that is activity learning No only done inside class but also outside class. it makes activity learning done will changed from before. Besides that, the teacher should too capable determine innovation appropriate learning with need every eye lesson. Subjects applied in school

_ really diverse, one of which is IPA. IPA subjects are something observing learning natural around in a manner systematic. Science learning aims For help students so they can control knowledge about science. In the science learning process it should be more emphasis on approach process skills, so student can Study with find fact, construct concepts, theories, and attitudes scientific students who can effect on quality product education. However, when This Still many do activity science learning only with limited convey concept, so student tend feel confusion on what he received. Implementation science learning requires a deep strategy determine the learning model. As is well known that the learning model is very necessary in activity learning. Learning models according to, learning models is instruction for educator in carry out classroom learning, start from prepare device learning, media and tools help until with evaluation that leads to achievement objective learning. Importance the use of appropriate learning models will help student overcome boredom, make student more active, and create atmosphere more pleasant. Application of learning models No escape from use of learning media. According to, learning media is means used For help activity learning, as well grow motivation Study students and all something used Good object nor environment students who can utilized in the activity process learning.

Based on results pre-research at SD Negeri Borobudur 1 shows that Still need done application of the science learning model that can change behavior Study student. Observation results show that of 38 students class IV there are 17 students difficult For concentrate in follow learning and less capable finish question given with ok. it proven when learning going on student often leave place sits and interferes another student. Besides that, when learning going on, students not enough skilled in follow activity learning. one lacking skills owned student that is science process skills. Lack of Skills the can happen Because exists influence from various thing, for one thing not enough innovation in learning. In the science learning process, the teacher only emphasize mastery concept, where student requested For listen, read, and be given question practice. Besides that, when science learning, students seldom invited For do supporting activities Skills student. Based on the problems above, it is necessary to have learning innovations to solve these problems. One of the innovative learning models that can be used as an alternative in science learning is the Problem Based Learning model. The PBL model is a learning model that focuses on problem solving activities (Yulianti & Gunawan, 2019: 401). Then media innovations that can be used in teaching alternative energy materials are bio-briquette media. According to Triantoro et al. (2019:55), bio briquettes are solid fuels which are alternative energy to replace kerosene and gas which have the technical feasibility to be used as fuel for households, small and medium industries. The use of bio-briquette media in science learning invites students to observe/observe, formulate hypotheses, conduct experiments, collect data, process data, and communicate so that they can hone students' science process skills. Various studies related to the effect of the Problem Based Learning model on students' science process skills have been carried out by previous researchers. One of them is in research conducted by Janah & Widodo (2018: 2106), in this study revealed that the application of the Problem Based Learning model can affect students' science process skills. This is evidenced by the contribution obtained from the use of the PBL model of 19.36%. This means that the use of the Problem Based Learning model is effectively used to test students' science process skills. The differentiator of the research conducted by Janah & Widodo with this research is the use of learning media. So, this research needs to be done so that there is a change in student learning activities and to test the effect of using the Problem Based Learning model on students' science process skills. Therefore, the purpose of this study was to determine the effect of the Problem Based Learning model assisted by bio-briquette media on students' science process skills.

Research Methodology

Study This use approach quantitative. Method used in study This that is experiment. Study experiment is research conducted For know There is nope consequence connection because consequence. How to implement study This is compare One or more group given experiment treatment with One or more group a comparison that doesn't given treatment. The design used in research This is a pre-experimental design. the type used is *one group pretest-posttest* which is type design research that only carry out research on one group without need group comparison. Population in study This that is student class IV Borobudur State Elementary School with sample class IVA as many as 20 students. Study This use purposive sampling technique. Purposive sampling technique is method used For determine sample with consideration certain.

Results and Discussion

Pretest- Posttest data Student

Study This aim For know the influence of the Problem Based Learning (PBL) model assisted by bio- briquette media to science process skills student class IV SD Negeri Borobudur 1. On research This done with apply three treatments. In each treatment throught several steps such as orienting students to the problem, organize students in the learning process, directing students to conduct investigations, develop and present the results obtained, as well as analyze and evaluate the problem-solving process. In the first treatment, research begins with giving a pretest to

students class IVA of SD Negeri Borobudur 1 as many as 20 students. After given a pretest, students given material draft energy alternative with using the Problem Based Learning model. Then in the second treatment, students given material related with Miscellaneous energy alternative with using the Problem Based Learning model. Then, in the third treatment, students given material related energy alternative replacement fossils (bio briquettes) with using the Problem Based Learning model assisted by bio- briquette media. After given material, then student given posttest questions for done. As for the results *pretest- pottest* student can seen in Figure 1 below: Based on the picture above, can is known that there is enhancement mark student when *pretest* and *posttest*. Whereas comparison mark *pretest* and *posttest* can seen in the table following:

Table 1. Comparison *pretest-posttest* value

Mark	*Pretest*	*Posttest*	Difference
Lowest	8.70	69.57	60.87
Highest	73.91	95.65	21.74
Average	40.43	79.35	38.92

Based on table above can is known difference mark student *pretest-posttest*. on value Lowest student there is enhancement significant value of 60.87 of mark *pretest* of 8.70 to 69.57 in value *post test*. Then on value highest experience enhancement of 21.74, where is known mark *pretest* student of 73.91 to 95.65 in value *post test*. Furthermore, on the average value of student's experience enhancement of 38.92 with *pretest* average value of 40.43 to 79.35 in the *posttest* average value. That is, the learning model *Problem Based Learning* assisted by bio- briquette media give influence to science process skills student. The result that have been obtained are influenced by several things such as the use of learning model and learning media. The learning model according to Kemp (Khoerunnisa & Aqwal, 2020:2), is an activity that must be carried out by teachers and students so that learning objective can be achieved effectively and efficiently. Meaning that the learning model in this study was compiled and implemented by teachers and students so that student's science process skills increased. While the media is a tool or means used to spread or convey a message or idea, so that it can simulated thoughts, feelings, actions, interests and attention of students in such a way that the teaching and learning process occurs in student (Cahyadi, 2019:3). In this aplication, the learning media in this research is used as an intermediary for students to learn about the changes that occur when conducting experiments. This is in line with the opinion of (Suryawan et al., 2023:341), who relevealed that learning media can help convey teacher information to students and vice versa.

Data on the Value of Students ' Science Process Skills

Measurement science process skills students on research This done use *pretest-posttest*. Measurement This done before and after given treatment with using the *Problem Based Learning* model assisted by bio briquette media.Skills This be measured based on indicators science process skills (KPS) such as observation, communicate, interpret data, formulate hypothesis, plan experiment, do experiment, predict, and apply concept. As for the results mark *pretest-posttest* science process skills can seen in the table following results mark every indicator science process skills served in the following 2 pictures this :
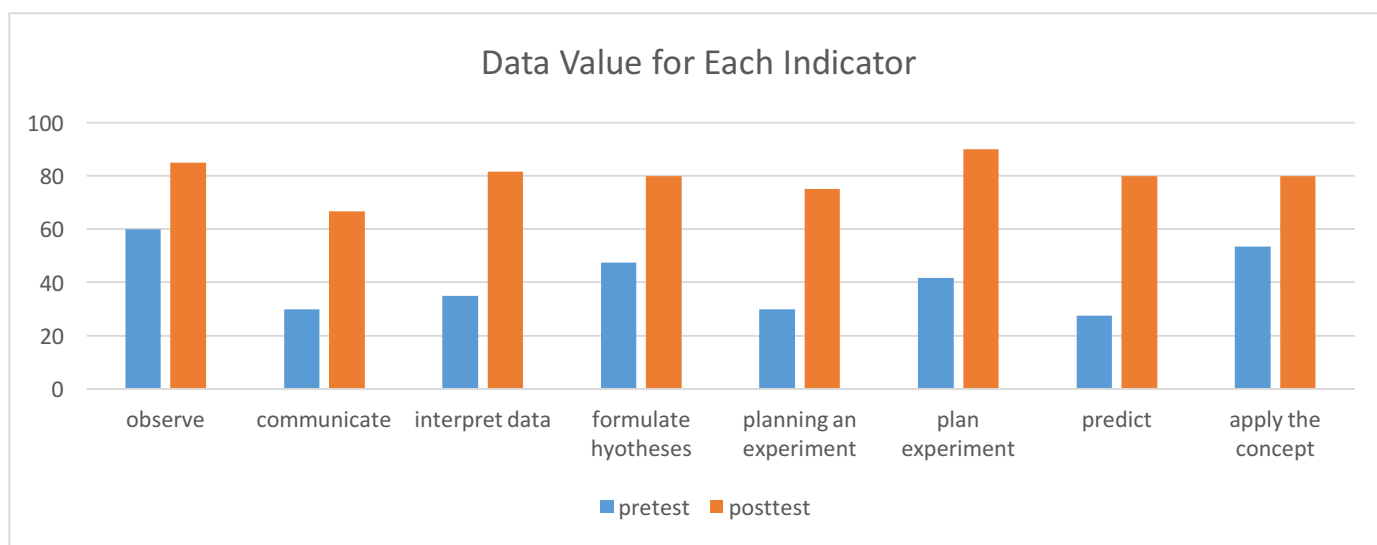

Figure 1. Science Process Skills Value Data

Based on the picture above, can is known that amount presentation students in each indicator increase. Start from ability observe / observation which increased 25 points. it because every do *treatments* student used to do observation to Photo or video presented use front projector class, so student used to do observation. it in accordance with statement Muntari et al (A. Rahayu, 2020:6) that observe is something activity For look for involving information whole sense like read, hear, pay attention, see, watch, and so on. Next on indicators communicate experience enhancement of 36.67. Improvements to indicators This caused when given student *treatment* made group, where in activities student used to For discuss, deliver opinion, ask, create reports, and so on. it in accordance with explanation, reveals that Skills communicate No only seen from delivery in a manner verbal, so in Skills communication observe ability student in communicate results test with form chart or report. Then on the indicators interpret experienced data enhancement of 46.67. it because student get used to finish given problem so that student capable connect results analysis performed with known statement reveals that indicator interpret is ability student in connect between variables, find patter, and find chart with theory already studied at the time activity Study teach. Indicator next experience enhancement is formulating hypothesis with enhancement of 32.5. this caused when currently do observation, students get used to for make guess temporary to result to be obtained., revealed that formulate hypothesis is guess while on existing and necessary issues proof based on the data that has been analyzed. Indicator next is plan test with enhancement of 45. Cause enhancement presentation indicator plan test that is student trained For make planning or current strategy discuss with Friend the group. it in accordance with opinion, that indicator plan test aims to students can determine tools and materials used in something practice in a manner right, can determine What only observed, measured, and recorded in activity practicum, yes determine ways and steps work inside something activity practicum. After plan experiment, indicator furthermore is do experiment, where on the indicator This experience enhancement mark of 48.33. Enhancement the caused by students who are used to it do experiment and interested when do new experiment. it in line with opinion Saputri et al. (Wismaningati et al., 2019: 2291) disclose that Skills tools and materials covers Skills choose tool, prepare tools and materials at the time do experiment, then will greatly affect results the resulting product. Furthermore indicator predict experience enhancement of 52.5. On indicators predict, students always trained for estimate likely that will happen in do experiment. it aligned with opinion Dimyati (Khairunnisa et al., 2019:62) disclose that predict can interpreted make forecast about all thing to be happen on time future, based on estimates on patterns or trend particular, or connection between facts, concepts, and principles in knowledge knowledge. Indicator final that is apply experienced concept enhancement mark of 26.67. it caused at the time gift *treatment*, student requested connect results observation with concept that they are learn and know. it in accordance with opinion Yuanita, skills apply draft can have implemented by students after understand concept and capable explain incident new with concept that has owned.
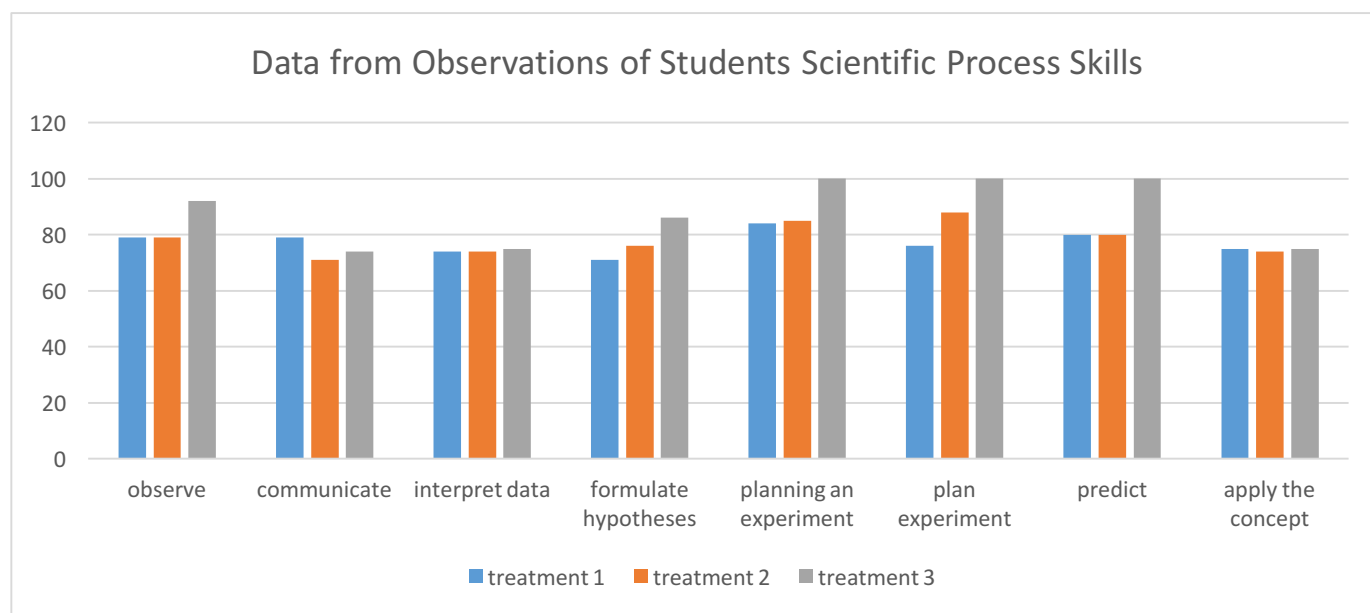

Figure 2. Data from Observation

Besides use pretest and posttest questions, science process skills data were also obtained from observation students. As for the data results observation student can see in the image below this: Based on picture above can is known that on activities observation student every indicator science process skills No always experience improvement, especially on frequent 2nd treatment experience decline. However, the decline occurred No too

significant, so the average value science process skills in treatment 1, 2, and 3 experienced enough improvement significant where in treatment 1 obtain average value of 77.25 in treatment 2 obtain the average value is 78.37, while in treatment 3 it is obtained the average value of 87.75.

1. Hypothesis Test Results

Hypothesis test done For see results study influential or no. Hypothesis test done with SPSS 26.0 for Windows help. The criteria used in this test is a paired sample t-test and then compared to with level significance 0.05. If the value of If probability > 0.05 then Ho is rejected and if mark probability. < 0.05 then Ho is accepted. After hypothesis testing done using SPSS 26.0 for Windows, then is known test results paired sample t-test as following:

Table 2. Hypothesis Test Results

	Difference in Value	Standard Deviation	Standard Error Means	Lower limit	Upper limit	Q	df	Sig. (2-Tailed)
Pretest and Posttest	-38,913	14,959	3,345	-45,914	-31,911	-11,633	19	.000

Based on table above, can is known that sig. (2-tailed) 0.000<0.05 which means there is difference between science process skills student before and after given treatment with using the *Problem Based Learning* model assisted by bio briquette media. it proven with *pretest* average value student namely 40.43 and the average value *of the posttest* student that is 79.34. So hypothesis state that there is the influence of the *Problem Based Learning* model assisted by bio- briquette media to science process skills student. Results obtained in accordance with research that has conducted by, where in study the disclose that the use of Problem Based Learning models can help student For reach indicators science process skills, so can increase science process skills student.

Conclusion

Based on results research, got is known that the Problem Based Learning model is assisted by bio- briquette media can influential significant to science process skills student. it because there is enhancement mark from pretest-posttest. Besides that is, the average value of the observations students also experience enhancement each time a treatment is given. Enhancement the supported by the model and media used make student become more active, motivated Study increase and can stimulate ability think student in solve problem presented. Results of research and discussion that has been carried out in class IV SD Negeri Borobudur 1, then can concluded that there is the influence of the Problem Based Learning (PBL) model assisted by bio-briquette media to science process skills student. it proven with the paired sample test that sig. is at 0.000 and over small from level significant 0.05 (0.000<0.05) which means there is enhancement science process skills from before given treatment and after treated with using the Problem Based Learning model. Limitations study This originate from the research process Where in activities need more time and effort Lots used in activity test the. The goal is for researchers furthermore can more estimate time and effort used for do test so more data is obtained Good again.

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