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LABORATORY MANAGEMENT IN IMPROVING THE QUALITY OF SCIENCE LEARNING

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Adi Maladona
Nusantara Islamic University Bandung
amaldona@yahoo.com

Iim Wasliman
Nusantara Islamic University Bandung
iim_wasliman@yahoo.com

Ikka Kartika
Nusantara Islamic University Bandung
iim_wasliman@yahoo.com

R Supyan Sauri
Nusantara Islamic University Bandung
uyunsupyan@uninus.ac.id

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Abstract

This study aims to identify and analyze laboratory management in improving the quality of science learning by describing and analyzing planning, organizing, implementing and monitoring as well as innovative ideas. This study uses a qualitative descriptive method with interview data collection techniques, observations and documentation studies and is studied using triangulation. Based on the results of the study, it can be concluded that (1) Planning is carried out by procuring facilities and infrastructure, as well as preparing laboratory administration. (2) The organization does not have a special laboratory and technician (3) Actuating of the science laboratory follows the schedule that has been prepared. However, there are still science teachers who have difficulty in practicum. (4) Controlling through formal and non-formal supervision, monitoring and evaluation. (5) Innovative ideas are carried out by the school in terms of facilities and science teachers in terms of learning. This research produces a research product "Virtual Laboratory Management" which aims to overcome obstacles in science laboratory management during the covid-19 pandemic.

Keywords: *design principles, making presentations, and packaging livestock and fishery products into food, Problem Based Learning, classroom action research, Craft Lessons.*

INTRODUCTION

In learning crafts, teachers in addition to theoretical skills education, need to train students' abilities about understanding knowledge about the principles of designing, preparing, serving, and packaging livestock (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed)) become food in the local area

In fact, there are still many Prakarya teachers who tend to pursue curriculum targets, and do not teach them to understand the principles of design, preparation, presentation, and packaging of livestock (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) products. food in the local area in craft learning activities which are considered important in daily life, especially at the junior high school level. As a result, students lack the ability to understand knowledge about the principles

of designing, serving, and packaging livestock products (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) into food in the local area.
The above become problems in the process of learning the craft that has a bad impact on the learning objectives to be achieved. To overcome this problem, we will try to research it through classroom action research

From the results of temporary observations, it turns out that the problems of the learning process of Food Processing at SMP Negeri 2 Rancaekek are less satisfactory than other classes. This needs to be taken seriously.

Based on the background of the problem above, the problem will be formulated as follows. (1) Can the Problem Based Learning (PBL) learning model improve students' mastery of understanding knowledge about the principles of designing, serving, and packaging fish and meat food processing in class IX-D of SMP Negeri 2 Rancaekek; (2) Is the Problem Based Learning (PBL) learning model able to improve the ability of students in processing food ingredients for processing fish and meat ingredients in class IX-D of SMP Negeri 2 Rancaekek; and (3) Can implementing classroom action solve the problem of learning Food Processing in the Craft subject?

The purpose of this classroom action research is to. Applying predictable actions can solve learning problems about Food Processing in Craft subjects.

Theoretical basis

The main material for processing Fish and Meat Foodstuffs is one of the studies of teaching materials for Craft subjects in class IX of SMP. knowledge of basic competencies 3.1 understand knowledge of the principles of designing, serving, and packaging livestock (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) products into food in the local area; and processing food products from livestock (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) in the local area into food and serving or packaging them, namely understanding the knowledge of the principles of designing, making presentations, and packaging of livestock (meat, eggs, milk) and fishery (fish, shrimp, squid, seaweed) products into local food .

Theoretically, fish and meat are sources of animal protein. Protein is an important substance for the body. Protein functions include: (1) As a building material. (2) Food reserves and energy sources. (3) Synthesis of antibodies, hormones, and enzymes. (4) Regulating the balance of acid and base levels in the cell. (5) Formation and repair of cells and tissues, especially children who are in the partum-plantation period. (Nuswantari, 2015: 191).

The Problem Based Learning (PBL) learning model is a Problem Based Learning (PBL) learning model according to the Ministry of Education and Culture of the Republic of Indonesia, 2015. which states in the 2013 Curriculum development, it is stated that Problem Based Learning is a learning model designed so that students gain knowledge that makes them proficient. in solving problems, and have their own learning model and have the skills to participate in a team. Ginting (2012:210) model of learning Problem based learning, often used the acronym PBL, learning and learning are oriented to solving various problems, especially those related to the application of subject matter in

real life. Sujana, (2014: 134) states "PBL is a learning that presents a variety of authentic and functioning problematic situations for students, so that these problems can be used as a springboard for conducting investigations and research".

The characteristics of the Problem Based Learning (PBL) learning model were put forward by Hosnan, (2014: 300) the characteristics of PBL there are 5 things as characteristics of problem-based learning, namely: "Proposing a problem or question; Relation to various disciplinary problems; authentic; Produce and exhibit results/works; And collaboration.

The steps for implementing the Problem Based Learning (PBL) learning model were put forward by the Ministry of Education and Culture of the Republic of Indonesia, (2015) which stated that the 2013 Curriculum stipulated a Problem Based Learning learning model with the following steps (Syntax): 1) Basic Concept (Basic Concept) ; 2) Defining the Problem (Defining the Problem); 3) Self Learning (Independent Learning); 4) Exchange knowledge (Exchange of Knowledge); 5) Authentic Assessment (Problem Solving Process Analysis and Evaluation)".

CAR is research that requires action to overcome problems in the field of education and is carried out in the classroom or school area with the aim of improving data or improving the quality of learning. Classroom Action Research (CAR) is one of the efforts of teachers or practitioners in the form of various activities carried out to improve and or improve the quality of learning in the classroom" (Kasbolah, 2001: 13). Classroom action research is an activity that is directly related to the teacher's duties in the field. In short, classroom action research is practical research conducted in the classroom and aims to improve existing learning. As according to Iskandar, (2015: 2) CAR must be carried out by the teacher with the problems encountered in the class where he teaches on a daily basis and of course according to the subjects of the field being taught.

Thus, it can be stated that classroom research or often called CAR is a practical research conducted in the classroom as one of the teacher's efforts to improve and or improve the quality of learning that is directly related to the teacher's duties in the field.

CAR as one of the types of scientific writing as a means to develop methods, media, and learning models. Iskandar, (2015: 10) CAR as one of the types of scientific writing has a fundamental function, namely being a means to develop methods, media, and learning models.

As stated in the definition of classroom action research above, the main purpose of CAR is to improve the learning process and learning outcomes. As stated by Arikunto. (2006:21). The purpose of Action Research is to solve problems through a real action, not just looking at the phenomenon in question. In simple terms in this study, the purpose of CAR refers to the opinion of Kasbolah, (2014:21) "The ultimate goal of CAR is to improve (1) the quality of learning practices in schools, (2) the relevance of education; (3) the quality of educational outcomes; (4) education management deficiency.

The CAR steps were put forward by Kasbolah, (2014: 44). "The flow of the implementation of the class action in question is as follows: (1) planning the action, (2) carrying out the action, (3) carrying out observations, and (4) reflecting".

METHOD

The procedure for classroom action research on craft learning through Problem Based Learning (PBL) at IX-D SMP Negeri 2 Rancaekek will be carried out by researchers for up to 2 (two) cycles. In each cycle, there are two meetings. Each cycle has four phases which include (1) planning CAR, (2) implementing CAR, (3) observing, and (4) reflecting.

The four phases are planned and implemented to improve student learning outcomes in learning crafts by using the Problem Based Learning (PBL) learning model.

The data collection techniques used in this CAR are as follows. Documentation study techniques, trial techniques, observation, interviews and test techniques.

Data analysis techniques and success criteria used in this study were to find the difference in the results of the second cycle of the second meeting minus the results of the first cycle of the first meeting. "The test results of the second cycle of the second meeting are posttest and the results of the first cycle of the first meeting are pretest. The difference between the two is the result of learning." (2012:84)

The criteria for success are increasing mastery of the material, and the ability of students in concepts. The determination of cognitive criteria uses a reference from Arikunto (2010: 246) with a range of values as follows. Criterion (A) Score 86 -100 very good qualification; Criterion (B) Score 71 - 85 good qualification; Criterion (C) Score 56 - 70 sufficient qualification; Criterion (D) Less score 40 - 55 less qualification.

RESULT AND DISCUSSION

1) Quantitative Data on Student Learning Outcomes Cycle I

From the quantitative data on the results of the assessment of students' learning achievements about understanding the knowledge of the principles of design, presentation, and packaging of fish and meat food processing in the Craft lesson, it can be reflected as follows:

First: The class average (mean) of 72.24 (below PBM 75) is reflected in not achieving minimum completeness in the Craft subject. However, the grades of class IX-D students who achieved scores above the PBM were 15 students or 39.47%, it was reflected in the learning outcomes that had not yet reached the 75% completeness level.

Thus, students in class IX-D of SMP Negeri 2 Rancaekek have not yet achieved the mastery of learning Craft subjects about understanding knowledge about the principles of designing, serving, and packaging fish and meat food processing.

Second: The results of the analysis of the achievement of abilities/skills in each indicator by the entire group can be explained as follows: The total average score achieved by all indicators is 78.62. When compared with the PBM score (75), there is an excess score of 3.62 scores.

Thus, the skills of students about processing livestock food (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) that exist in the local area into food and serving or packaging in Cycle I CAR

can be stated as having more than PBM. This explanation shows that there has been success in achieving PBM scores. Skill qualifications reach good category.

Third: The results of observation of attitudes in the first cycle based on the mode of qualification of the attitudes of students can be explained as follows: the average value (mean) of attitudes in following the learning process is 74.74, and the level of attitude development is 78.73%, so it can be reflected in the attitudes of students in the learning process for processing Fish and Meat Foodstuffs is stated to be mostly good.

2) Quantitative Data on Understanding Achievement in Cycle II

From the quantitative data from the achievement assessment of basic competence in understanding the knowledge of the principles of designing, serving, and packaging the processing of Fish and Meat Foodstuffs in the Craft lesson, it can be reflected as follows:

First: The average grade (mean) of 78.29 (above PBM 75) is reflected in having achieved minimum completeness in the Craft subject. Thus, the grades of class IX-D students who achieved scores above the PBM were 29 students or 76.32%, it was reflected in the learning outcomes that had reached a 75% completeness level.

Thus, students of class IX-D of SMP Negeri 2 Rancaekek have achieved mastery in learning the Craft subjects about basic competencies in understanding knowledge about the principles of designing, making, serving, and packaging livestock products (meat, eggs, milk) and fisheries (fish, shrimp). , squid, seaweed) become food in the local area.

The results of the analysis of the achievement of abilities/skills on each indicator by all groups can be explained as follows: The total average score achieved by all indicators is 84.30. When compared with the KKM score (75), there is an excess of 9.30 scores.

Thus, the skills of students about processing livestock food (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) that exist in the local area into food and serving or packaging in cycle 2 CAR can be used. declared to have exceeded the PBM. This explanation shows that there has been success in achieving PBM scores. Skill qualifications reach good category.

The results of observing attitudes in the first cycle based on the attitude qualification mode of students can be explained that the average value (mean) of attitudes in following the learning process is 81.18, and the level of attitude development is 85.70%, so it can be reflected in the attitudes of students in the learning process. Fish and Meat Foodstuffs area is stated to be almost entirely good.

Based on the description of the data found in cycle 2 above, it can be reflected that: the understanding and ability of students in craft learning can be qualified well, there is an increase in understanding, describing abilities, and developing attitudes in processing Fish and Meat Foodstuffs.

This is evidenced by the understanding aspect reaching a 76.32% class completeness level. The skill aspect reaches the class completeness level, which is 84.41%, if qualified, it has exceeded the class completeness. In addition, from the aspect of individual student abilities, it appears that they have achieved an average score of 75.66, or almost entirely (90.79%), which can be reflected in very high qualifications. Likewise, the level of attitude development is 85.70% with a level of qualification that is almost entirely good.

Discussion

In general, the implementation of classroom action research on Craft subjects can be said as action research in class IX of SMP Negeri 2 Rancaekek which is carried out with 2 cycles of action activities to solve problems in Craft learning, through a learning process using the Problem Based Learning (PBL) learning model. . The learning improvement process can be stated to be running well and has a high CBSA level in accordance with innovative, interactive and creative learning steps in meaningful learning.

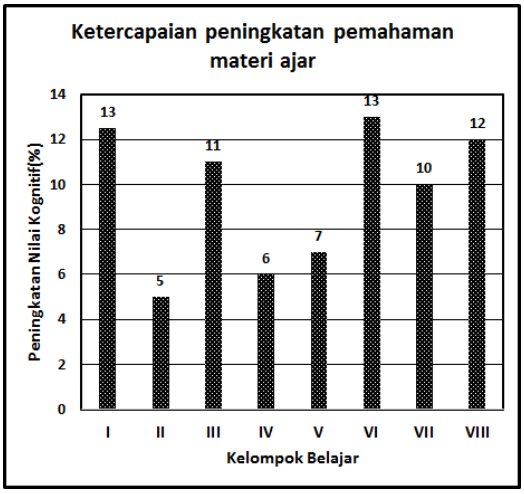
This is evidenced by: The procedure for the preparation of classroom action research is in accordance with the plan and stated that 92.5% of the qualifications are very good. The implementation is stated that 95% of the qualifications are very good, and have followed the correct CAR procedures and the steps (Syntax) of the Problem Based Learning (PBL) learning model that are carried out correctly. Cognitive achievement Learners achieve completeness 76.32%. The skill level reached 84.41% with good qualifications.

Table 1
Obtaining the understanding value of cycles I and II

kelompok	pretes	siklus I	siklus II	Selisih	peningkatan
I	65	70	78	13	19.2
II	68	69	73	5	7.4
III	70	78	81	11	15.7
IV	63	66	69	6	9.5
V	71	72	78	7	9.9
VI	72	75	85	13	18.1
VII	68	71	78	10	14.7
VIII	72	76	84	12	16.7
Jumlah	548.5	576.8	625.0	76.5	
Rata2 (Mean)	68.6	72.1	78.1	9.6	13.9
Tingkat Ketuntasan	26.3	39.5	76.3		%

The table above shows: (1) The difference between the average score of the pretest and the average value of the second cycle of group I is 12.5 or there has been an increase in learning outcomes of 19.23%; (2) The difference in the average score of group II is 5 or there has been an increase in learning outcomes of 7.41%; (3) The difference in the average score of group III is 11 or there has been an increase in learning outcomes of 15.71%; (4) The difference in the average score of group IV is 6 or there has been an increase in learning outcomes of 9.52%; (5) The difference in the average score of group V is 7 or there has been an increase in learning outcomes of 9.86%; (6) The difference in the average score of group VI is 13 or there has been an increase in learning outcomes of 18.06%;

(7) The difference in the average score of group VII is 10 or there has been an increase in learning outcomes of 14.71%; (8) The difference in the average score of group VIII is 12 or there has been an increase in learning outcomes of 16.67%. The average increase in understanding of learning outcomes is 78.13 minus 68.56 which is 9.56 or an increase of 13.95%.



Grafik 4.3 Achievement of increasing understanding of teaching materials

The following is an analysis of the data on the results of the analysis on the achievement of the ability to process food from livestock (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) in the local area into food as well as serving or packaging from each group of students at the first cycle of the first meeting and the second cycle of the second meeting in table 4.2 below.

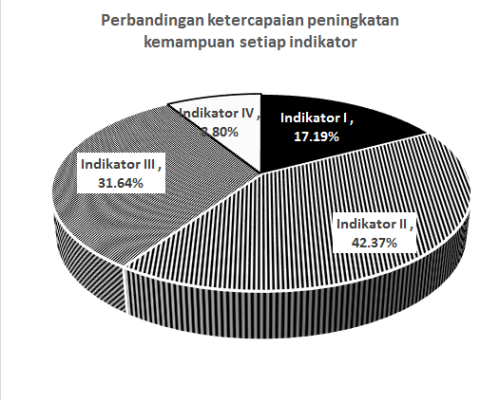
Table 4.2
Table 2 Average Skills Cycle I & II

Kemampuan	Siklus I	Siklus II	Selisih	Peningkatan (%)
Indikator 1	93	97	3.91	4.19
Indikator 2	70	80	9.63	13.68
Indikator 3	70	78	7.19	10.22
Indikator 4	81	83	2.00	2.48
Rata-rata	79	84	5.68	7.22

The table above shows: (1) The difference between indicator 1 and 3.91 or an increase of 4.19%; (2) The difference between indicator 2 and 9.63 or an increase of 13.68%; (3) The difference between indicator 3 and 7.19 or an increase of 10.22%; . Globally, the average difference with the average is 5.68 or an increase of 7.22%.

Next, the researcher will determine the comparison of the achievement of all indicators through the level of achievement as follows. The comparison of the achievement of each indicator between indicator 1: indicator 2: indicator 3: indicator 4 is 3.91: 9.63: 7.19: 2 a total of 22.72. Furthermore,

each achievement number for each indicator is divided by 22.72 and then multiplied by 100. The result of processing these numbers is a comparison of the achievement of indicator number 1: 2: 3: 4 is 17.19% : 42.37% :31.64% : 8.804% Total 100%.



Grafik 4.6 Comparison of the achievement of increasing the ability of each indicator

Based on the discussion of the results of the analysis above, it can be shown that the hypotheses in this class action research are: "The ability of students to understand the knowledge of the principles of designing, making, serving, and packaging the processing of Fish and Meat Foodstuffs and processing of Fish and Meat Foodstuffs. Meat can be increased, if it is applied with the Problem Based Learning (PBL) learning model. "proved to be quite significant".

CONCLUSION

From the report on the results of the Classroom Action Research on the Craft subjects that have been carried out, several conclusions and suggestions have been made as research inputs to be recommended and followed up. The conclusions and suggestions are as follows:

1) There has been an increase in students' understanding of understanding the principles of designing, serving, and packaging the processing of Fish and Meat Foodstuffs. This is evidenced by the results of the CAR, namely: The average value of understanding in the second cycle is 78.29, and the difference with the pretest score (68.68) is 9.61 or an increase of 13.98% which is a significant increase in learning outcomes.

2) There has been an average increase in the overall ability of student learning outcomes regarding skills in processing livestock food (meat, eggs, milk) and fisheries (fish, shrimp, squid, seaweed) in the local area into food and presenting or packing for class IX-D students of SMP Negeri 2 Rancaekek as evidenced by the average ability score in the first cycle of 78.62 and the average ability value in the second cycle of 84.30 the difference is 5.68, or the percentage increase as much as 7.22% is a significant increase in the ability of learning outcomes.

3) The implementation of classroom action research on Craft subjects through a learning process using the Problem Based Learning (PBL) learning model can solve problems in Craft learning. This is evidenced by: The preparation procedure is stated to be 92.5% with very good qualifications. The implementation is stated to be 95% with very good qualifications. And the level of active participation of students in learning reaches 85.70% which is declared very high.

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