

Implementation of the Project Based Learning For Improve Learning Skills in Ornamental Fish Cultivation Technology Course

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Abstract: Learning at the higher education level needs special attention. The learning strategies used by teachers also need to be developed. One learning model that can be used in higher education is project-based learning. The aim of this study is implementing a new learning model using a project-based learning because it's able to increase students' understanding and practical skills in ornamental fish cultivation course. This research was carried out at the Aquaculture Study Program, Faculty of Agriculture, University of Mataram. The population in this study were students of the aquaculture study program. This research was conducted in the odd semester of the 2023/2024 academic year. This type of research is descriptive research, with a qualitative approach. The implementation of project-based learning in the ornamental fish cultivation technology course has several stages: problem recognition by asking students a question regarding the topic of ornamental fish cultivation that is currently occurring in society; plan a project from the existing topic; continue with preparing an activity schedule; project implementation and supervision; assessment and evaluation. The conclusion is that there is a significant influence from the application of the Project Based Learning on students' learning understanding and practical skills in ornamental fish cultivation technology course.

Keywords: Practical Skills, Project Based Learning, Understanding.

INTRODUCTION

Education is the most important thing in the effort to produce a generation that is reliable and able to compete in every sector of life. Without education, factors such as creativity and intelligence which determine the progress and decline of a nation will be hampered. The government has made various efforts to improve the quality of national education, including curriculum renewal, improving the quality of teaching staff, structuring education management and implementing educational information technology (Amelia et al., 2021). In the world of education, especially a teacher must be able to convey teaching material in the right way so that students are able to grasp the meaning of the lesson the teacher conveys. Usually a teacher uses various methods (learning models) to make the resulting learning attract students' interest and capture students' attention with the aim of improving students' abilities during the learning process. By choosing the right learning model, teachers can also hope that students will not only learn but also have the ability to think creatively,

critically and have good understanding (Schiff, 2020).

A learning model is a pattern or plan that is used as a guide in planning learning in the classroom or outside the classroom. The learning model refers to the learning approach that will be used, including the stages in learning activities, teaching objectives, learning environment and how to manage the class (Wahida et al., 2015). Apart from that, the learning model is used to achieve the goals that have been set. In learning activities, teachers need methods so that their use varies according to what they want to achieve after the learning process ends. Choosing the right learning model will certainly provide the best possible solution and achieve the goals in implementing learning (Schiff, 2020). Learning at the higher education level needs special attention. The learning strategies used by teachers also need to be developed. Not just giving lots of assignments but minimal evaluation, but also learning that must encourage independence, learning creativity and thinking abilities. The ability to learn independently is certainly needed by students to face independent

assignments, group assignments and final assignments. One learning model that can be used in higher education is project based learning.

The project based learning model is innovative learning that is student centered and places lecturers as motivators and facilitators, where students are given the opportunity to work autonomously to construct their learning (Anggraini & Wulandari, 2021). Project-based learning is defined as teaching that tries to link technology with everyday life problems that are familiar to students, or with a school project (Sitanggang et al., 2023). Fatmawati et al. (2014) stated that project-based learning is learning based on a constructivist approach that provides maximum opportunities for students to be active in the learning process. Through this learning, students can be trained in critical and complex thinking skills. The results of observations in the field that researchers have carried out in learning ornamental fish cultivation technology course, lecturers still use the lecture method so that students feel bored and bored during lectures because learning feels monotonous and boring, causing some students to appear less focused in learning. The learning process only focuses on lecturers, so students are not given the opportunity to practice directly cultivating ornamental fish. Based on this, it is necessary to carry out treatment in the form of implementing a new learning model using a project-based learning model because this learning model is able to increase students' understanding and practical skills in ornamental fish cultivation and reduce boredom with the previous learning method.

METHODS

This research was carried out at the Aquaculture Study Program, Faculty of Agriculture, University of Mataram. The population in this study were students of the aquaculture study program, totaling 53 people and divided into 8 groups. This research was conducted in the odd semester of the 2023/2024 academic year. This type of research is descriptive research, with a qualitative approach. Descriptive research is collecting data through factors supporting the research object, while qualitative research is research that aims to understand a social phenomenon through an in-depth communication interaction process (Ningsih & Affandi, 2023). At the end of this research, an evaluation was carried out (Affandi et al., 2023). The purpose of the evaluation is to measure the level of students understanding of the knowledge gained from the given project. The evaluation stage includes pre-test activities before the project is carried out. Then carry out a post-test after carrying out the project to compare the level of students understanding before and after the activity.

RESULT AND DISCUSSION

The first stage provides an explanation of the assignments given regarding project-based learning. Then 53 students were divided into 8 groups. Next, they were given 5 days to conduct a location survey and look for topics that are relevant to ornamental fish cultivation on Lombok Island. Each group has a different location and topic from each other. The group division is presented in Table 1.

Table 1. Group Distribution of Project-Based Learning Ornamental Fish Cultivation Technology Course

Group	Number of members	Location	Topic	Owner
1	7 students	Lomfish (East Pagesangan Village, Mataram District, Mataram City)	Cultivation Techniques of Molly (<i>Poecilia sphenops</i>)	Mr. Parman Hadi
2	7 students	Lomfish (East Pagesangan Village, Mataram District, Mataram City)	Cultivation Techniques of Koi (<i>Cyprinus carpio</i>)	Mr. Parman Hadi
3	6 students	Induk Utama Fish Farming Group (Pondok Buak Hamlet, Batu Kumbung Village, Lingsar District, West Lombok Regency)	Cultivation Techniques of Comet (<i>Carassius auratus</i>)	Mr. Agus Sumantri
4	6 students	Induk Utama Fish Farming Group (Pondok Buak	Cultivation Techniques of Koi (<i>Cyprinus carpio</i>)	Mr. Agus Sumantri

Group	Number of members	Location	Topic	Owner
5	7 students	Hamlet, Batu Kumbung Village, Lingsar District, West Lombok Regency UMK Oasis (Kebun Sari Village, Ampenan District, Mataram City)	Cultivation Techniques of Guppy (<i>Poecilia reticulata</i>)	Mr. Salim
6	7 students	Erick Koi Store (Sigerongan Village, Lingsar District, West Lombok Regency)	Cultivation Techniques of Koi (<i>Cyprinus carpio</i>)	Mr. Bah
7	7 students	Mahkota Betta Fish (Langko Village, Lingsar District, West Lombok Regency)	Cultivation Techniques of Koi (<i>Cyprinus rubrofuscus</i>)	Mr. Haqul Yakin
8	6 students	Mahkota Betta Fish (Langko Village, Lingsar District, West Lombok Regency)	Cultivation Techniques of Molly (<i>Poecilia latipinna</i>)	Mr. Haqul Yakin

The next step is to carry out a pre-test containing 10 questions to determine students' understanding of ornamental fish cultivation material before carrying out the project assignment. The results showed that the average

pre-test score range was 57.33-61. The lowest average score in group 8 was 57.33 and the highest average score in group 4 was 61. The complete results are presented in Figure 1.

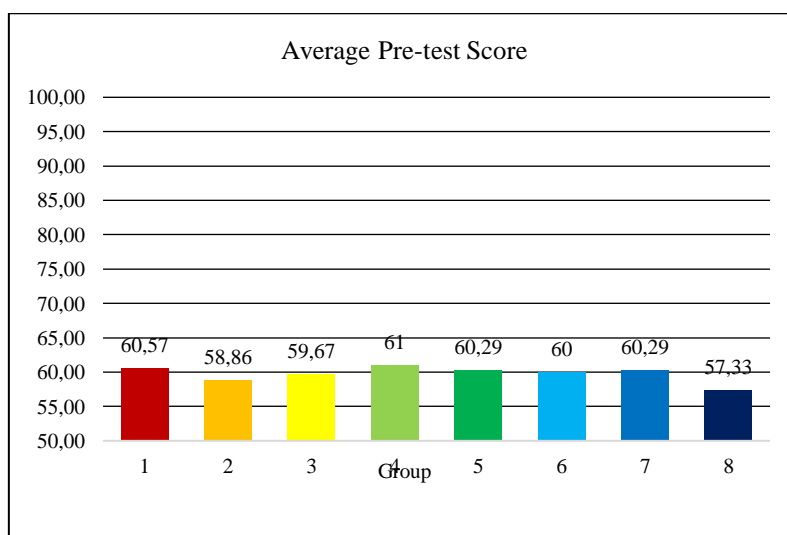


Figure 1. Average Pre-test Score Results

After that, an explanation is given regarding the guidelines for carrying out project tasks. This includes the report format, presentation format, and what data needs to be captured. An example of a project report format is presented in Figure 2. Based on students project activities in the field of ornamental fish cultivation for 1 month, they gained knowledge of fish cultivation both through direct practice and through interviews with cultivators. In general, ornamental fish cultivation techniques have several stages, including broodstock

management (source of broodstock and procurement of broodstock, preparation of broodstock ponds, selection of broodstock, maintenance of broodstock), spawning, egg handling, larval rearing (preparation of rearing tanks, filling water, hatching eggs, grading), feed management (type and nutrient content of feed, frequency and time of feeding), water quality management (saponization, water quality parameters), fish health management, harvesting and transportation.

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Figure 2. Project Report Format

At the end of project-based learning, students must submit a project assignment report and make a presentation accompanied by discussion. Finally, they will do a post-test consisting of 10 questions to find out the effect of the project-based learning they have done on their understanding of ornamental fish cultivation

techniques. The results of post-test showed that the average post-test score range was 84.29-88.33. The lowest average score in group 7 was 84.29 and the highest average score in group 8 was 88.33. The complete results are presented in Figure 3.

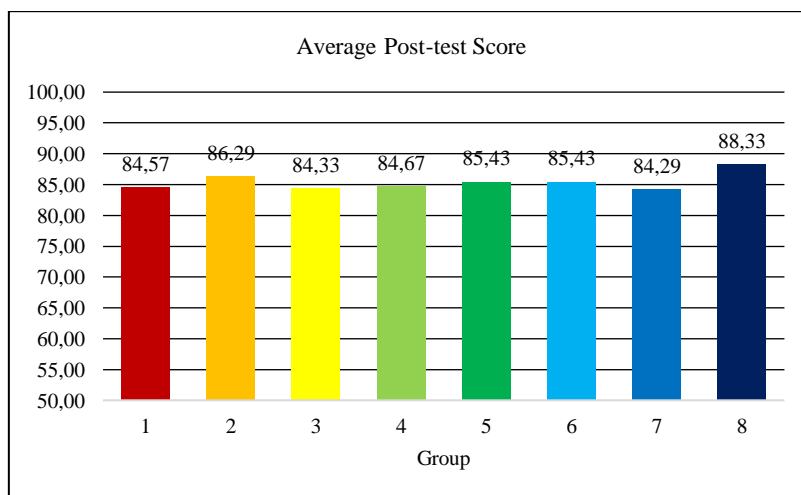


Figure 3. Average Post-test Score Results

If we refer to the results of the pre-test and post-test, the results can be obtained that the ornamental fish cultivation technology course using the project-based learning method has a positive effect on students' understanding of ornamental fish cultivation techniques.

Discussion

The implementation of project-based learning in the ornamental fish cultivation

technology course has several stages, the first is problem recognition by asking students a question regarding the topic of ornamental fish cultivation that is currently occurring in society. The next step is to plan a project from the existing topic and continue with preparing an activity schedule. After that, project implementation and supervision. Finally, an assessment and evaluation is carried out.

The stages of this activity are in accordance with Tim PjBL Teknik Informatika (2020) who states that the stages of implementing project-based learning consist of 6 stages, namely recognizing the problem (question), designing the project plan, preparing the project schedule, implementing and monitoring the project, testing the results (project presentation), and evaluation and reflection.

Based on Table 1, it is known that 53 students were divided into 8 groups with each group having between 6-7 students. Each group carried out a survey and chose their own place to carry out this project. There are some groups that have the same place as other groups but the topics of their projects are different from each other. There are 2 groups carrying out projects in Lomfish (East Pagesangan Village, Mataram District, Mataram City) with the owner of the place being Mr. Parman Hadi, they are groups 1 (molly) and 2 (koi). Groups 3 (comet) and 4 (koi) carried out projects in the Induk Utama Fish Farming Group (Pondok Buak Hamlet, Batu Kumbung Village, Lingsar District, West Lombok Regency) with the group leader being Mr. Agus Sumantri. Group 5 with the topic of guppies carried out a project at UMK Oasis (Kebun Sari Village, Ampenan District, Mataram City) which was chaired by Mr. Salim. Group 6 project on the topic of koi fish was carried out at the Erick Koi Store (Sigerongan Village, Lingsar District, West Lombok Regency) with the owner of the place being Mr. Bah. Finally, groups 7 (koi) and 8 (molly) chose the project location at Mahkota Betta Fish (Langko Village, Lingsar District, West Lombok Regency) which is owned by Mr. Haqul Yakin. Darmasusantini et al. (2015) stated that the more and more diverse the data collection points are, it is hoped that the resulting data will be more representative, varied, and more knowledge will be gained.

Based on students project activities in the field of ornamental fish cultivation for 1 month, they gained knowledge of fish cultivation both through direct practice and through interviews with cultivators. In general, ornamental fish cultivation techniques have several stages, including broodstock management (source of broodstock and procurement of broodstock, preparation of broodstock ponds, selection of broodstock, maintenance of broodstock), spawning, egg handling, larval rearing (preparation of rearing tanks, filling water, hatching eggs, grading), feed management (type

and nutrient content of feed, frequency and time of feeding), water quality management (saponization, water quality parameters), fish health management, harvesting and transportation. The results of this research are in accordance with Good Fish Cultivation Methods (CBIB) according to the Badan Standardisasi Nasional (2023) that the stages of fish cultivation include preparation of rearing containers, water quality management, feed, broodstock management (selection of broodstock, broodstock care), seed selection, seed care, fish health management, harvesting, packaging and distribution. Also supported by the statement of Hastuti & Subandiyono (2022), the stages of fish cultivation consist of selecting cultivation locations, preparation and stocking, broodstock management, broodstock spawning, egg hatching, larval rearing, feeding management, water management, disease and control measures, harvesting.

The low average pre-test score ranging from 57.33-61 is thought to be due to students' lack of understanding of the direct practice of ornamental fish cultivation. Adri (2020) explained that if the average student pre-test score is low, this indicates that the student's initial level of understanding of the material provided is also still low. Then the average post-test score of students after carrying out the project increased to a range of 84.29-88.33. There was an increase of 38.80-54.07%. These results indicate that there has been an increase in students' understanding of cultivating ornamental fish both in direct practice and in theory. According to Banuwa & Susanti (2021), students who experience an increase in post-test scores from the pre-test also experience an increase in knowledge after participating in the project. Furthermore, the knowledge gained by students during project activities has proven to be able to increase students' knowledge and understanding significantly. The project-based learning method is deemed appropriate to use in ornamental fish cultivation technology courses.

CONCLUSION

Based on the results of this research, it can be concluded that there is a significant influence from the application of the Project Based Learning on students' learning understanding and practical skills in ornamental fish cultivation technology course.

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