

CHAPTER I

PRELIMINARY

1.1 Problem Background

Indonesia is one of the countries with the highest rates of youth unemployment in the Asia Pacific region where 20% of the unemployment rate is university graduates (Yuniasanti, 2015). The high unemployment rate for college graduates is due to the fact that graduates prefer to find work rather than create jobs. The available employment opportunities are also unable to accommodate the number of existing graduates causing the potential for unemployment in Indonesia more increase.

The Colleges have a way to overcome the high unemployment rate of college graduates by applying entrepreneurship courses to learning. This aims to create students ready to become entrepreneurs after completing their education. Entrepreneurship Education is presented to encourage the birth of potential young entrepreneurs who have expertise in their field of knowledge (Afifi and Yulisma, 2020).

Instilling the entrepreneurial values can be implemented by activities in the learning process. The learning process in college must use effective teaching materials and methods so that students are able to have skills in applied fields and able to apply in life. One of the teaching materials that can be used to speed up and simplify the learning process is modules. The effective learning model is to be able to implement entrepreneurial values through active and effective activities, namely project-based learning. Project Based Learning (PjBL) is an authentic learning model whose steps can train students' abilities and skills to plan, implement and evaluate projects in the real world so can facilitate students to think creatively and innovate.

Based on the results of the researcher's observations of students taking Entrepreneurship courses at the Biology Department, Medan State University, the researchers obtained information that as many as 84.7% of students were interested in entrepreneurship courses. However, the results of filling out the questionnaire

about availability of books show that the books in Entrepreneurship course that support students in carrying out projects is only 39%. In addition, the discussion on animal cultivation only focused on the cultivation of silkworms and pearl oysters, which are difficult to put into practice because they require a large amount of cost.

Therefore, researcher are motivated to provide simple solutions in implementing cultivation materials into project activities by utilizing the surrounding natural resources. One of the cultivation that simple and its implementation can be more easily carried out by students, namely the cultivation of Black Soldier Fly (BSF) larvae or what is often known as Maggot BSF. The background for choosing the Maggot BSF cultivation is based on cultivation activities that can utilize the surrounding organic waste as a medium. This is also in accordance with the results of the researcher's observations showing that student knowledge of BSF larvae cultivation was only 54.4% and as many as 86.3% of students stated the need to create BSF larvae cultivation modules as a supporting book for entrepreneurship learning.

The selection of the maggot BSF was motivated by the ability of the Maggot BSF to consume large amounts of organic waste, faster and more efficiently (Mutiar et al., 2021). In this research, utilizing of organic waste will carry out from organic waste from MMTC Raya Market. MMTC Raya Market is one of market that produce organic waste which is near from Medan State University. The Black Soldier Fly is not an insect that is a source of disease, so later cultivation activities are very safe if carried out close to the community environment (Rukmini et al., 2020). Black Soldier Fly larvae have a protein nutrient content of up to 45-50% and fat up to 24-30%, so they can be used as a source of highly nutritious feed for poultry and fish (Muhayyat et al., 2016).

Maggot BSF is one of the sustainable innovative strategy that can process organic waste more quickly and efficiently. The products resulting from organic waste processing activities using maggot BSF include : larvae that can be used as animal feed, food residues from maggot (Kasgot) as organic fertilizers and larval processing derivatives that can be used as a substitute for fish meal in making pellets. Cultivating maggot is not only an alternative feed, but can be a business opportunity that brings in rupiah (Sitompul & Maulina, 2022). This shows that the

prospects for the cultivation of BSF larvae is very good because they are able to generate profits through organic waste and having Zero Waste value by carrying out continuous waste management.

Based on research that was previously carried out by Afifi Ruhana and Yulisma Lia (2020) stated that through the application of the Project Based Learning model in the BSF Maggot cultivation practicum can increase student entrepreneurial intentions and can be used as an innovative learning model. Supported by other relevant research that has been carried out by Natalia Widya and Jalinus Nizward (2021) regarding the effectiveness of developing project-based modules in entrepreneurship courses, the results are that the modules developed can help students play an active role in learning, with the projects being worked on making students more involved in learning activities.

Based on these problems, researchers will conduct research on create of Black Solldier Fly larvae cultivation modules based on project in entrepreneurship courses. Create of Module uses Research and Development (R&D) methodology research with the ADDIE model (Analyze, Design, Develop, Implementation, and Evaluation). R&D research is able to drive product innovation processes according to needs and is able to produce products with validation value through a team of experts. Based on the background that has been described, it is necessary to conduct research with the title "Create of Black Soldier Fly (*Hermetia illucens*) Larvae Cultivation Module Based On Project in Entrepreneurship Courses at Department of Biology, Medan State University".

1.2 Problem Identification

Based on the description on the background of the problem above, several problems that can be identified are:

1. Sources and teaching materials of module entrepreneurship courses not yet available, especially cultivation materials in the Biology department, Medan State University.
2. Implementation of project-based activities on cultivation material is difficult for students because the material only focused on the cultivation of silkworms and pearl shells which require more expensive costs.

3. Many students of the Department of Biology, Medan State University, do not know about the cultivation and benefits of Black Soldier Fly (*Hermetia illucens*) Larvae.

1.3 Scope of Research

The scope of research that will be carried out includes :

1. The variable of research is the create of Black Soldier Fly larvae cultivation module based on project in entrepreneurship courses.
2. The object of research in this study is students majoring in Biology, Medan State University.

1.4 Problem Formulation

Based on the background of the problems that have been described, the formulation of the problems obtained as follows:

1. What is the level of feasibility of Black Soldier Fly larvae cultivation module based on project according to material experts, language experts and graphic design experts?
2. How do the lecturers and students in the entrepreneurship course respond to the feasibility of the Black Soldier Fly larvae cultivation module based on project that has been prepared?
3. What are the results of the effectiveness test of the Black Soldier Fly larvae cultivation module based on project in the entrepreneurship course department of Biology Medan State University?

1.5 Limitation of Problem

Limitation of problem is one of the efforts to determine the scope of the problem to make it clear and directed, it can be limited to:

1. The module created contains Black Soldier Fly Larvae cultivation material based on project.
2. Assessment of the quality of the module is limited to the assessment of material experts, language experts and graphic design experts, assessment of lecturers and students.
3. The development model used is the ADDIE model which is limited to the Analyze, Design, Develop, Implementation, and Evaluation stages.

4. The results of this study are to produce Black Soldier Fly larvae cultivation module based on project in the Entrepreneurship course.

1.6 The Objective of Research

Based on the formulation of the problems that have been described, the research objectives to be achieved are:

1. To determine the level of feasibility of developing Black Soldier Fly larvae cultivation module based on project according to material experts, language experts and graphic design experts.
2. To find out the responses of lecturers who teach entrepreneurship courses and related students about Black Soldier Fly larvae cultivation module based on project as product created.
3. To find out the results of the effectiveness test of the Black Soldier Fly larvae cultivation module based on project that has been created in the Biology department of Medan State University.

1.7 The Benefit of Research

The results of this development research are expected to be useful theoretically and practically. The benefits of this development research include:

1. For students, it can add insight and help students to better understand the process of cultivating Black Soldier Fly larvae directly through project-based activities so as to improve learning outcomes and increase entrepreneurial intensity.
2. For lecturers, this development research module can be useful as a guide in implementing project-based learning in classes about cultivation material.
3. For other researchers, as a reference source for further researchers who wish to design and develop modules.
4. For the community, as a source of information on how to cultivate Black Soldier Fly larvae using organic waste.