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Analysis of Entrepreneurial Interest in Biology Education Students after Attending Plant Structure and Development Course

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ABSTRACT

One of the objectives of the Biology Education study program is that students have entrepreneurial insights and competencies in the field of biology education that can contribute to self-development and society. Based on the objectives of this study program, it can be concluded that graduates of the study program are not only expected to become teachers but also to become entrepreneurs. Therefore, in the lecture process, it is hoped that each course can be oriented to foster students' entrepreneurial interest and motivation. This study aims to reveal how the entrepreneurial interest of Biology Education students after taking the Plant Structure and Development course. Because of the potential of this course if the right project assignment is developed in fostering the entrepreneurial spirit, this will be able to form graduates who have entrepreneurial competencies. This research is an exploratory descriptive research. The data were analyzed with descriptive statistics and the results of the data analysis were later interpreted in qualitative form. The results showed that 91.37% of students are interested in entrepreneurship and the level of entrepreneurial interest of students has a high category. Based on the results of the study it can be concluded that the entrepreneurial interest of Biology Education students after taking the course of Plant Structure and Development has a high category.

Keywords: entrepreneurial interest 1, Plant Structure and Development 2, Biology Education 3,

Introduction

One of the objectives of the Biology Education Study Program, Universitas Negeri Padang (UNP) is that students are expected to have entrepreneurial insights and competencies in the field of biology education that can contribute to the development of themselves and society. Based on the objectives of this study program, it can be concluded that graduates of the study program are not only expected to become teachers but also entrepreneurs. To facilitate this, UNP itself provides an Introduction to Entrepreneurship course that can be taken by students in their second semester of study (especially Biology Education study program students). This Introduction to Entrepreneurship course is a compulsory course (taken in semester 2nd) that must be taken by all students. In addition, the study program curriculum also provides courses (elective courses in semester 5th or 6th) named Biological Entrepreneurship.

The results of the analysis that has been carried out on the Biology Education study program curriculum can be seen that from the description of existing courses, these two courses have the same objectives. The purpose of these two courses is for students to have entrepreneurial knowledge and experience so that they can foster their motivation and interest in entrepreneurship after attending lectures and studies at UNP. This means that indirectly, these two (2) courses support the objectives of the Biology Education Study Program to have entrepreneurial knowledge and competencies.

The purpose of such a study program is as an alternative to creating new jobs for graduates who are not solely dependent on becoming teachers. This is also related to the high unemployment rate in Indonesia, which is a challenge for universities in creating graduates who are able to be employed. Limited job opportunities and educational qualifications requirements are factors for the large number of unemployed people in Indonesia. Mutiasari (2018) said that entrepreneurship is one of the options that can be considered, in addition to having a great chance of success as well as a form of opening new jobs. This is supported by Indarti and Rostiani (2008), who state that entrepreneurship is in accordance with government programs that accelerate the creation of small and medium entrepreneurs who are strong and based on science and technology.

Fostering an entrepreneurial spirit in students and graduates of this study program is also a demand to welcome the era of the Industrial Revolution 4.0. Arsyad (2021) said that this industrial revolution has a major influence on the world of education. This is based on education is the center for creating and producing quality generations who will fill this industrial revolution era. Redhana (2019); Jayadi, et al. (2020); and Angga & Iskandar (2022) also said that to face the era of the Industrial Revolution 4.0, students need to be equipped to have 21st-century skills, such as 4C skills (critical thinking and problem-solving, creativity and innovation, collaboration, and communication). One of the suggested learning models to foster these skills is the Project-Based Learning (PjBL) model. This is reinforced by De Graff & Kolmos (2007) that PjBL not only trains 21st Century skills but can also develop students' soft skills. One of the advantages of the PjBL learning model, according to Haerullah and Hasan (2017), is that this learning model can involve students directly so that they are able to design the knowledge gained to be developed and useful in their real-world life. They can implement them with the knowledge and experience gained in their daily lives.

Two of the syntaxes of this PjBL learning model according to Yudiono, et al (2019) are product development and product evaluation. This can be interpreted as the PjBl learning model being project-based in the form of products. One of the courses in the Education Study Program that uses this PjBL learning model is the Plant Structure and Development course. This course discusses the morphological and anatomical characteristics of plants, especially Spermatophyta plants (root, stem, leaf, flower, fruit, and seed organs). This course is conducted in two sessions, theoretical lectures and practicum. In theoretical lectures, students

are given concepts about plant morphology and anatomy while in practicum activities students are trained to be able to describe the morphology and anatomy of plants directly.

Plant morphology material in the Plant Structure and Development course focuses on studying how the outer forms of plant organs. One of the sub-materials is about modifications and special forms of some plant organs, which are unique to plants. So that the different morphological forms become interesting things to make plants that have the potential to be used as ornamental plants. As well as the morphological shape of the flower plants that are attractive to become ornamental plants. In one of the submaterials of plant anatomy, students will learn what organelles and cells will play a role in providing color and producing ergastic substances in plants. Where this material has usefulness in everyday life, such as the content of substances in plants that can be used as medicinal materials. Based on what has been explained, this Plant Structure and Development course material has the potential to foster student interest in utilizing plants in products or materials that have selling value in the business world.

Based on the results of interviews with 2 lecturers teaching this course, the projects given to students are in the form of making leaflets of morphological forms of plants and books of scientific names of plants. In addition to the final project products that have been described previously in this SPT course, the practicum activities also have a final project to make herbariums from plants obtained during field lectures. Based on this, the final product of the course project still does not lead to fostering the entrepreneurial spirit of students. Interest in entrepreneurship is influenced by several factors, such as internal, external, and contextual factors (Stewart Jr., et al., 1999). This is also supported by Tjahjono and Ardi (2008) explaining that the decision to become an entrepreneur is influenced by several factors, namely: (1) internal factors (personality, perception, motivation and learning (attitude) and (2) external factors (family environment, friends and neighbours). David C. Mclelland in Suryana (2008) also states that entrepreneurship is determined by achievement motives, optimism, value attitudes, and entrepreneurial status or success.

The learning model lecturers use is good and can improve students' creativity and ability to create a product. However, this form of project product still lacks student interest in entrepreneurship. This is due to the form of project assignments is still limited to the creation of a book of plant scientific names that are less related to the material in the course of Plant Structure and Development. Project products in the form of leaflets of plant morphological forms are basically related to the material in the course. However, it is still unable to increase student interest in entrepreneurship, so it is less able to support the objectives of the study program, students have insight and competence in entrepreneurship.

If it is associated with the final potential after attending lectures in Plant Structure and Development courses in the field of entrepreneurship, there are actually many forms of projects that can be made and created by students that can foster an entrepreneurial spirit. Based on the problems that have been described, the authors have conducted research aimed at revealing how the entrepreneurial interest of Biology Education students after taking the Plant Structure and Development lecture. Because of the potential of this course if the right project assignment is developed in fostering an entrepreneurial spirit, this will be able to form graduates who have entrepreneurial competencies.

Methods

This research is exploratory, descriptive research where researchers gather and collect data from activities that have occurred without any manipulation or treatment given to respondents. This exploratory, descriptive research aims to describe how the entrepreneurial interests of students of the Biology Education Study Program, FMIPA, Universitas Negeri Padang, after attending lectures on Plant Structure and Development. Respondents in this study were Biology Education Study Program students in the class of 2021 who had attended lectures on Plant Structure and Development during the January-June 2022 semester. The

sampling technique in this study was to use the Saturation Sampling technique with a sample size of 140 students. The instrument used in this study is a student entrepreneurial interest questionnaire with 4 alternative answers (strongly agree, agree, disagree, and strongly disagree). This instrument consists of questions about student identity and statements about interest in entrepreneurship, which consists of 4 indicators: (1) interest in entrepreneurship, (2) actively participating in entrepreneurial activities, (3) attention to entrepreneurial activities, and (4) tendency to create a business. The data were analyzed with descriptive statistics and the results of the data analysis were later interpreted in qualitative form with the following modified criteria from Darrussyamsu, Wahyuni, Fitri, Fadilah, Putri, and Mukhtar (2019).

Table 1. Criteria for Student Entrepreneurial Interest

Criteria	Range
Very High	3,26 – 4,00
High	2,51 – 3,25
Moderately High	1,76 – 2,50
Low	1,00 – 1,75

Results and Discussion

Based on the results of data analysis, it is known that students' interest in entrepreneurship after taking lectures on Plant Structure and Development is illustrated in Figure 1.

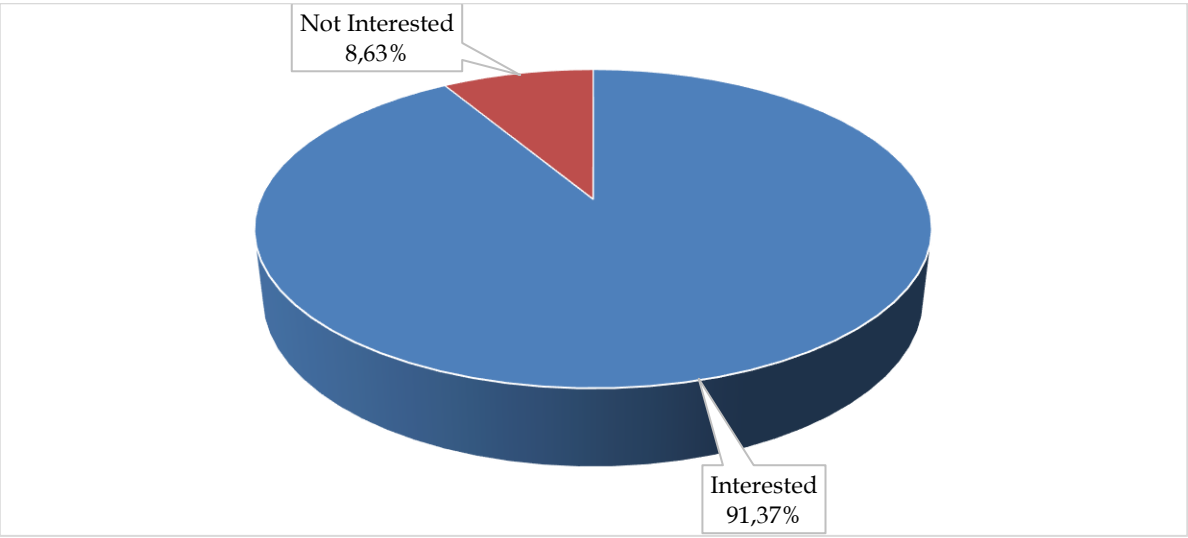

Figure 1. Illustration of Entrepreneurial Interest of Biology Education Study Program Students, FMIPA, Padang State University after Attending Plant Structure and Development Lectures.

The results of other data analysis from questionnaires that have been distributed and filled in by respondents (students) show that of all student respondents, the occupation of the fathers of Biology Education Program students is mostly farmers or fishermen (30% or 42 people) and the least as private employees (2.86% or 4 people). In addition to the father's occupation data, the occupation of the mother is also known. Most mothers work as housewives (IRT), with the number 71.11% (96 people), and the least as private employees, namely 0.74% (1 person). A clear picture of the percentage of occupations of fathers and mothers of students is presented in Figure 2 and Figure 3.

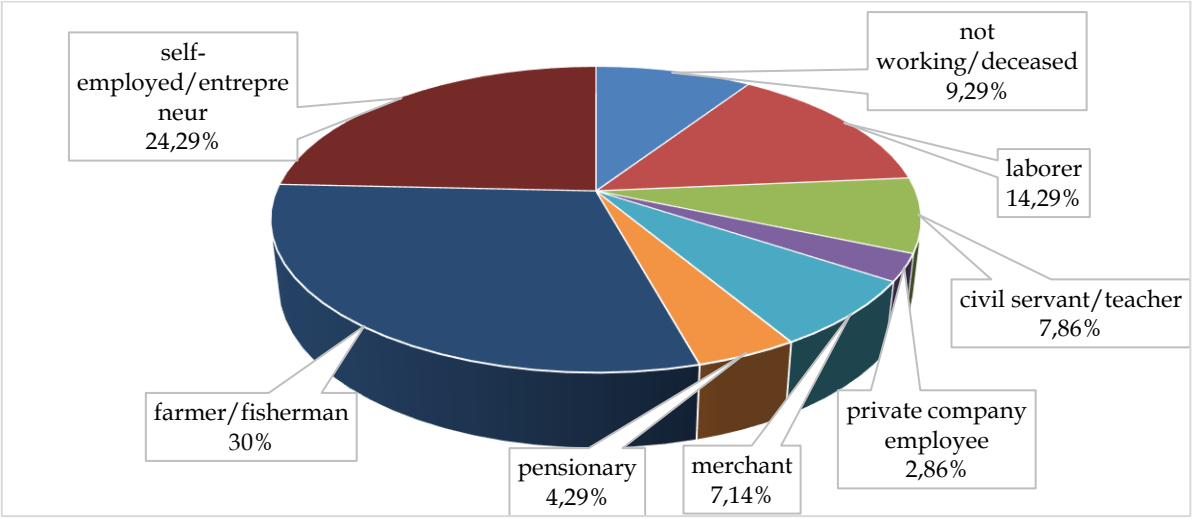

Figure 2. Illustration of Father's Occupation of Students of Biology Education Study Program, FMIPA, Padang State University.

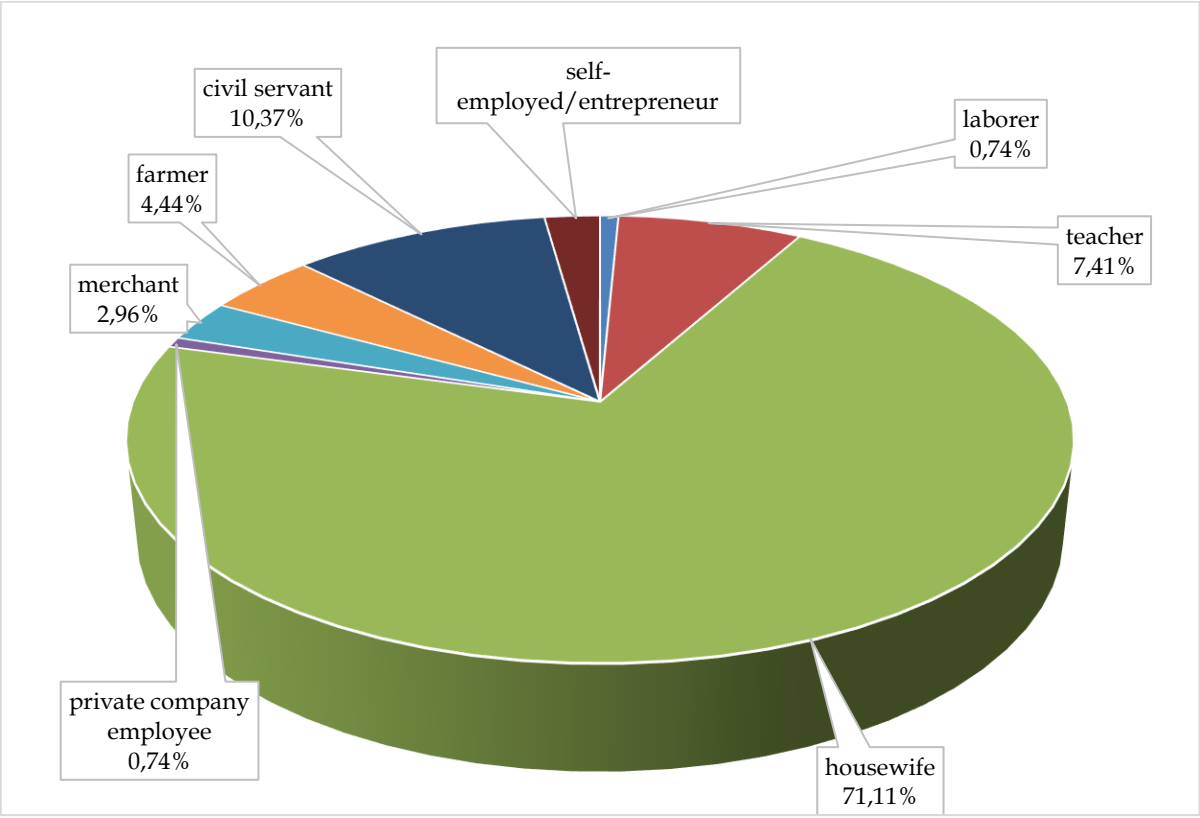

Figure 3. Illustration of Mother's Occupation of Students of Biology Education Study Program, FMIPA, Universitas Negeri Padang.

In addition to the data presented above, researchers also obtained data on the entrepreneurial interest of Biology Education Study Program students. The statements given to students include 4 aspects, including (1) interest in entrepreneurship, (2) actively participating in entrepreneurial activities, (3) attention to entrepreneurial activities, and (4) the tendency to create a business. Based on the results of the questionnaire analysis that has been answered by respondents, the data on the entrepreneurial interest of Biology Education Study

Program students after attending the Plant Structure and Development lecture are presented in Table 2.

Table 2. Entrepreneurial Interest of Biology Education Study Program Students after Attending Plant Structure and Development Course

Aspect	Average Score	Criteria
Interest in entrepreneurship	3,23	High
Actively participating in entrepreneurial activities	3,16	High
Attention to entrepreneurial activities	3,14	High
Tendency to create a business	3,15	High
Average	**3,17**	**High**

Interest is an activity that can arouse a person's curiosity so that they are concerned about it and it gives them pleasure. This interest is also an indicator of motivation. This is reinforced by Holland's opinion in Nastiti &Laili (2020), which states that interest is an indicator of the existence of strength in a person in a certain field that motivates that person to study and will produce something optimally. One type of interest is interest in the field of business (entrepreneurship). Someone who has a high interest in entrepreneurship is motivated to study the business field.

Based on the research results that have been presented, it is known in Figure 1 that, in general (91.37%) of students are interested in entrepreneurship after attending Plant Structure and Development lectures. The results of the analysis of questionnaire answers show that several businesses want to be developed, such as ornamental and medicinal plant shops, food, beverage, and medicinal businesses from natural plants, plant seed shops, herbal processing, vegetable trading, and plantation businesses. This high student interest in entrepreneurship, especially after attending Plant Structure and Development lectures, can also be influenced because previously they have also attended Entrepreneurship lectures. As stated by Majdi (2012); Hanum (2015); Ramadhani & Nurnida (2017); and Nursita (2021) entrepreneurship learning has a positive and supportive influence on student entrepreneurial interest.

The high student interest is due to the description of plant morphology and anatomy material that discusses how the outer and inner structures of plants provide benefits in everyday life. Based on the results of the questionnaire analysis, it is known that one of the business interests chosen by students is having an ornamental plant shop. This is in accordance with the plant morphology material in the Plant Structure and Development course. One of the sub-materials is about modifications and special forms of some plant organs that are unique to plants so that these different morphological forms become interesting things to become plants that have the attraction to become ornamental plants. Similarly, the morphological shape of the flowers of plants that are attractive to become ornamental plants.

Based on the character of the material in the Plant Structure and Development course, it is known that this course matches the PjBL syntax, according to Lucas (2014). The syntax of the PjBL model, according to Lucas (2014), can be implemented and followed by students in the form of project assignments that have been determined and in accordance with the lecture material. At the end of this lecture, students produce an assignment in the form of a leaflet about plants that explains in detail, especially how the morphology of the plants they analyze. When designing this project task, students are also asked to make complete observations of plant morphology to be able to reveal plant descriptions so that they can be outlined in leaflets. So, not only does this PjBL syntax demand student creativity, but it can also train students' scientific work skills or science processes. This is in accordance with what was conveyed by Mulyani, et al. (2019) that practicum-based PjBL can be used to increase the scientific work

activities of students' psychomotor competence. This means that this learning model can also develop students' soft skills.

One of the statements in the questionnaire is "If students have the opportunity for entrepreneurship, what form of business will be pursued after attending the Plant Structure and Development lecture?". This statement is given to explore what kind of entrepreneurial ideas the students think of after attending lectures. Based on the analysis of student answers, it is known that the business that students want to develop is also closely related to the Plant Structure and Development course, which discusses plant morphology and anatomy. This is also supported by the explanation in the introduction of the Plant Structure and Development lecture material can support students' interest in entrepreneurship by choosing a suitable project assignment product.

In addition, this interest in entrepreneurship is influenced by parental employment. The results of data analysis obtained by parents' occupation of students who work as civil servants or retirees are very low, more dominated as entrepreneurs/ self-employed and farmers/fishermen and housewives (female parents) (data Figure 2 & 3). This is supported by Hanum (2015) and Majdi (2015), who states that the involvement, support, and internalization process of entrepreneurial values from families, especially parents, contribute to students' entrepreneurial interest.

The internalization process and high support from parents can have an indirect effect on student interest in entrepreneurship. This entrepreneurial interest can be influenced by external factors, one of which is family. This is supported by the results of research by Ardiyani & Kusuma (2016) and Jailani, et al. (2017) that the influence of family environment, especially good and qualified parents, will have a positive influence on increasing student interest in entrepreneurship. Parents' socioeconomic status can also have a direct effect on student interest. The results of data analysis can also indicate that high student interest (Table 2) in entrepreneurship has parents and families who also work passionately to try in their lives so that their children are motivated and interested in entrepreneurship. This is also supported by the results of research by Ariffin & Ziyad (2018) that entrepreneurship education, business experience, parental employment and ethnic origin have a significant effect on student entrepreneurial interest mediated by entrepreneurial self-efficacy (ESE).

Conclusion

Based on the results and discussion that has been described, it can be concluded that the entrepreneurial interest of Biology Education students after taking the Plant Structure and Development course has a high category. This can be influenced by various factors, including internal and external factors. Two external factors that influence students' entrepreneurial interest are parents' jobs and the characteristics of the courses followed by students.

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