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Analysis of Student Perceptions of Jambi University Biology Education Entrepreneurship

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ABSTRACT

In today's higher education, there is a strong correlation between specialized education and entrepreneurship, and this is highly relevant. This is because entrepreneurship is not just about creating new businesses, but it also involves creativity, problem-solving, leadership, and innovation. The aim of this research is to assist instructors in understanding students' entrepreneurial knowledge in the field of biology education. This study employs a mixed-method exploratory research approach. "Mixed Methods" is a combination method, which is a research approach that integrates or links quantitative and qualitative research methods, while Exploration involves drawing conclusions from the amalgamation of quantitative and qualitative data The sample technique used in this research is purposive sampling. The total number of Biology Education students at Jambi University is 420 and the sample used is 201 students . The result is, the data analysis indicates that students' knowledge of biology concepts applicable to entrepreneurship is positive. Approximately 43.3% of students fall into the "very good" category, and 55.7% fall into the "good" category. This reflects that the majority of students are already aware of the potential application of biology concepts in entrepreneurship. The analysis of students' knowledge in this regard strongly supports further advancement. This isn't limited solely to students majoring in economics; it also applies to Biology Education students who understand that entrepreneurship aligns with the primary goals of Jambi University. Furthermore, the field of biology offers numerous opportunities for economic ventures involving plants and animals.

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INTRODUCTION

A paradigm shift in higher education, involving a transition from a focus on educators/lecturers to a student-centered learning approach, has brought positive impacts to the world of education (Usanto, 2022). This recognizes that education is no longer just the process

of imparting knowledge from educators to students but an effort to assist students in becoming active, critical, and independent learners who can develop their own knowledge and skills. This change also involves a deep understanding of the importance of integrating entrepreneurship aspects into higher education (Perdana et al., 2020). Entrepreneurship is not just an additional skill but has become a key foundation for individual success in daily life and in an increasingly competitive job market.

In today's higher education, the close relationship between expertise education and entrepreneurship has become highly relevant. This is because entrepreneurship is not only about creating new businesses but also involves creativity, problem-solving, leadership, and innovation (Klofsten et al., 2019). Students need to learn how to connect their knowledge in their field of study with entrepreneurial skills so they can apply that knowledge in real-world situations. By incorporating entrepreneurship into the curriculum and student learning experiences, universities help create graduates who not only have a deep understanding of their field of study but also have the ability to think creatively, adapt to change, and create opportunities in the ever-evolving job market (Hrabowski, 2013). This is a crucial step in preparing students for success in their future lives.

In today's higher education, the close relationship between expertise education and entrepreneurship has become highly relevant. This is because entrepreneurship is not just about creating new businesses but also involves creativity, problem-solving, leadership, and innovation (Klofsten et al., 2019). Students need to learn how to connect their knowledge in their field of study with entrepreneurial skills so they can apply that knowledge in real-world situations. By incorporating entrepreneurship into the curriculum and student learning experiences, universities help create graduates who not only have a deep understanding of their field of study but also have the ability to think creatively, adapt to change, and create opportunities in the ever-evolving job market. This is a crucial step in preparing students for success in their future lives (Chiang & Lee, 2016).

Entrepreneurship education offers a comprehensive approach through interdisciplinary experiential learning and student-centered learning supported by action-based research (Sabani et al., 2020). It places greater emphasis on "to be" in addition to "to know." Entrepreneurship education develops a holistic educational concept, covering the 4H (Head, Hands, Health, and Heart). This aligns with the four pillars of education formulated by UNESCO: (1) Learning to know, (2) Learning to do, (3) Learning to be, and (4) Learning to live together. Effective management is essential to ensure that global education is geared toward solving current problems (Altun, 2018). The management of entrepreneurial education is adapted to the curriculum in each country (Rozaq et al., 2022 ;Gagaramusu, 2014).

The Biology program at the University of Jambi is one of the first programs to introduce specific entrepreneurship courses and often conducts entrepreneurial activities. The Biology Education program at the University of Jambi has been offering specialized entrepreneurship courses since 2015. Success in learning that produces true entrepreneurs needs to be instilled from the beginning to ensure the correct perception aligns with the established learning goals. Based on preliminary studies of the jobs of students' parents, the majority are farmers,

accounting for 63.34%, while the rest are civil servants (9.09%), teachers (9.09%), and entrepreneurs (18.18%).

In biology education, there are many topics with the potential to be turned into marketable products or entrepreneurial opportunities. For instance, research in biotechnology, including genetic engineering, microorganism production, or bioprocessing, offers the potential for applications in the pharmaceutical industry, food production, or biochemistry, all of which have substantial market potential (Husamah, 2015). Additionally, an understanding of ecosystems and environmental conservation can lead to business opportunities, such as ecotourism or the development of eco-friendly products. The sustainable utilization of natural resources and biology-based innovations can also create products that support more sustainable agriculture, fisheries, or food industries (Thatoi et al., 2013). By combining biological knowledge with entrepreneurial creativity, the opportunities to create valuable products or services that promote sustainability and human well-being become more extensive**.**

The curriculum policies in higher education vary from one country to another (Abu Bakar, 2013). Students are not only expected to excel in their learning patterns but also to be actively creative, innovative, and to increase their knowledge through independent learning (Wahyudiono & Unesa, 2016). These demands are beneficial for students when they graduate and compete in the job market. According to Soepomo, (2011), to produce the best graduates, in addition to imparting knowledge in their field of expertise, entrepreneurship education should also be provided. In Indonesia, both the government and higher education institutions have incorporated entrepreneurship education for students (Solihat & Nurdianti, 2020). In 2020, the Indonesian government introduced the "Merdeka Belajar" (Freedom to Learn) curriculum, which grants students the freedom to choose their desired fields and combine expert and entrepreneurial subjects (Mustaghfiroh, 2020). The National University of Singapore (NUS) has been implementing entrepreneurship in education since the late 1990s, and to foster entrepreneurship, NUS Enterprise was established. NUS Enterprise has taken the initiative to reform technology commercialization policies and infuse a strong entrepreneurial element into education and research.

Higher education institutions in Indonesia are currently implementing the "Merdeka Belajar" curriculum. Based on the decision outlined in the Ministry of Education and Culture's decree (Kemendikbud, 2020), "Merdeka Belajar" is a new curriculum issued by the Minister of Education and Culture, Nadiem Anwar Makarim. Additionally, this curriculum allows educators the freedom to innovate (Solihat & Nurdianti, 2020). The freedom to innovate means that educators are allowed to design and conduct learning according to the situation, ensuring that the learning objectives are maximally achieved (Nind, 2019). Moreover, this curriculum combines expertise with entrepreneurship. Higher education institutions are striving to facilitate students' creativity in entrepreneurship. Empowering entrepreneurship is highly strategic as it has significant potential to stimulate economic activities and become a source of income (Asriati, 2020). At the higher education level in Indonesia, the Ministry of Culture and Education often holds various national-level entrepreneurship competitions (Sumarno et al., 2018). The University of Jambi plays an active role in entrepreneurship development. Efforts made by the University of Jambi include implementing the vision and mission of a "world-class

entrepreneurship university" (Sutrisno, 2020). Through the vision and mission, the University of Jambi prioritizes entrepreneurship (Susanti, 2011).

The objective of this research is to facilitate instructors in understanding students' knowledge of entrepreneurship in biology education. The findings of this research can contribute to improving students' perceptions of entrepreneurship in the field of Biology, as well as providing further references for the study program to impart applied understanding in learning.

METHOD

This research uses a mixed method exploratory research. Creswell (2009), states that "Mixed Methods" is a combination method which is a research approach that combines or connects quantitative and qualitative research methods, while Exploratory is drawing conclusions from a combination of quantitative and qualitative data. For stakeholder and student interview data discussed qualitatively and for student perception questionnaire data discussed quantitatively (Sugiyono, 2013). Student perception questionnaires were conducted using a Likert scale using 4 scales, namely SS (Strongly Agree), S (Agree), TS (Disagree), and STS (Strongly Disagree) (Nainggolan & Harny, 2020). The following is a student perception questionnaire grid which can be seen in Table 1. (which has been tested and got a cronbart alphaα value of 0.878).

Table 1. Statements and indicators of student perceptions of Entrepreneurship

No	Variable	Indicator	Statement	Total Items
1	Student perceptions of the Vision and Mission of the University of Jambi as "A World Class Entrepreneurship University" and its role in the independent learning campus curriculum.	Students' knowledge of the concept of biology in relation to entrepreneurship.	1, 2, 3, 4, 5, 6, 22	7
		The background of students who become supports for entrepreneurship	8, 9, 13, 18, 19, 20, 21	7
		Student experience in entrepreneurship	7, 10, 11, 12, 14, 15, 16, 17	8

(Gule & Mndebele, 2019).

The sample technique used in this research is purposive sampling. The total number of Biology Education students at Jambi University is 420 and the sample used is 201 students, based on the krectjei table, with an error rate of 5% and a confidence level of 95%. Determination of Stakeholders has criteria, namely having a position at the University, understanding or currently managing the Vision and Mission of Jambi University, participating in several entrepreneurial activities or currently managing entrepreneurship, and currently running an entrepreneurship program at Jambi University. Meanwhile, students have the criteria of understanding the Vision and Mission of the University of Jambi, understanding entrepreneurship, being active in organizations and often participating in entrepreneurship training, and liking entrepreneurship and being active in several entrepreneurial activities. Data analysis used in this study were 2 types of descriptive statistical data for quantitative data in the form of mean, mode, median, standard deviation, then strengthened by analysis of interview data in the form of data reduction, data presentation, and drawing conclusions.The following is the overall research flow framework, which can be seen in Figure 1.

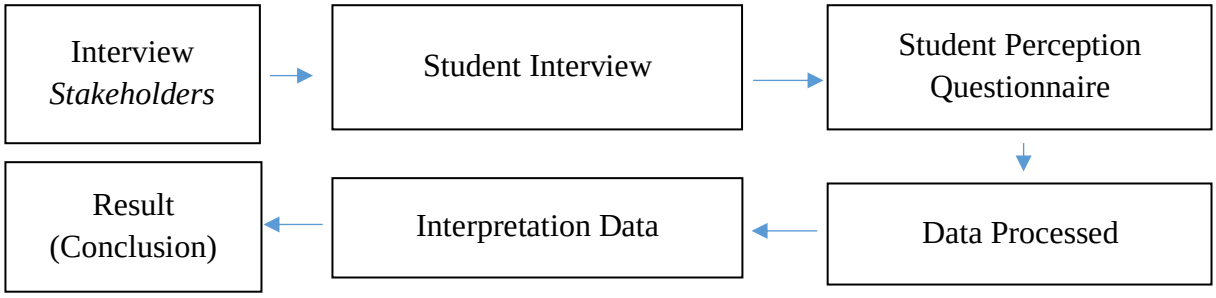

Figure 1. Research flow framework

RESULT AD DISCUSSION

Student knowledge about the concept of biology can be applied in entrepreneurship

Statistical data analysis on students' perceptions of the concept of biology being applicable in entrepreneurship. This can be seen based on the data description in Table 2.

Table 2. The level of student knowledge regarding the concept of biology being applicable in entrepreneurship.

No	Range	attitude	Total	Means	Median	mode	Std. deviation	Min	Max
1	24-28	Very good	87	23,23	23.00	21	2,583	17	28
2	18-23	Good	112						
3	13-17	Not good	2						
4	7-12	Very Not Good	0						

Based on Table 2, it can be observed that 43.3% (87 out of 201 students) fall into the very good category, 55.7% (112 out of 201 students) fall into the good category, 0.99% (2 out of 201 students) are in the bad category, and 0% (0 out of 201 students) are in the very bad category. This indicates that some students are already aware that the concept of biology can be applied in entrepreneurship. The results of the analysis of Biology Education students' knowledge regarding the applicability of biology concepts in entrepreneurship are highly supportive of moving on to the next stage, which is the understanding that knowledge about entrepreneurship is not only possessed by students involved in economic matters but also that Biology Education students understand that entrepreneurship is a primary goal of the University of Jambi. The concept of entrepreneurship can stimulate interest in developing education that can encourage and enhance entrepreneurial activities (Boldureanu et al., 2020). Furthermore, a career as an entrepreneur has the advantage of being an alternative choice for becoming a successful entrepreneur, achieving financial independence, and contributing to economic growth by creating job opportunities (Kurniawan & Sanawiri, 2018).

Furthermore, in the concept of biology, there are various types of plants and animals with significant potential to be developed into economically valuable products. Some examples of plants that can be sources of entrepreneurship include medicinal herbs, spices, ornamental plants, and organic vegetables (Pany, 2014). Medicinal herbs, for instance, have applications in alternative medicine and holistic health, while spices like pepper, turmeric, and cinnamon are essential ingredients in the culinary and pharmaceutical industries (Malla et al., 2015; Rizki,

2017). Additionally, ornamental plants and organic vegetables are increasingly in demand in the global market. On the other hand, animals also play a crucial role in biological entrepreneurship. Examples include fish farming, poultry farming, poultry breeding, insect farming, and beekeeping. Fish farming, for example, is a growing business due to the increasing demand for fresh fish products. Poultry farming and poultry breeding are vital sources for meeting the protein needs of the community. Insect farming and beekeeping, on the other hand, offer opportunities in the production of honey, wax, and other economically valuable insect products (Nurul Jannah, 2022). With a deep understanding of biology, entrepreneurs can identify business opportunities in these various aspects and create products or services that contribute to economic growth while harnessing the potential of sustainable natural resources.

Generally, a career as an entrepreneur is avoided by students who are more interested in seeking opportunities to work in the public or private sectors. Students in supportive entrepreneurial environments tend to seek business education because it equips them with the entrepreneurial skills and knowledge required to start their own businesses and create new job opportunities (Syahroni et al., 2021;Bakheet, 2018). The process in which individuals understand information in their surroundings, whether through sight, hearing, touch, or smell, is the definition of perception (Effendy & Sunarsi, 2020). The idea of integrating entrepreneurship into education has generated a lot of enthusiasm in recent decades. Positive impacts have been observed in various areas such as economic growth, job creation, increased societal resilience, as well as individual growth, enhanced school engagement, and increased equity. However, there are negative impacts, including a lack of time and resources, teachers' fear of commercialization, challenges related to the structure of education, difficulties in assessment, and a lack of clear definitions. These impacts are faced by practitioners when attempting to integrate entrepreneurship into education (Lackeus, 2015). Knowledge about entrepreneurship gaps is always open in every learning process within the Biology Education program.

The background of students who become supports for entrepreneurship

Table 3. Level of background of students who support entrepreneurship

No	Range	attitude	Total	Means	Median	mode	Std. deviation	Min	Max
1	27-32	Very good	77	25,53	25.00	24	4,058	10	32
2	21-26	Good	110						
3	15-20	Not good	12						
4	8-14	Very Not Good	2						

Based on Table 3. shows that 38.3% (77 out of 201 students) are in the very good category, 54.7% (110 out of 201 students) are in the good category, 5.97% (12 out of 201 students) are in the bad category , and 0.99% (2 of 201 students) are in the very bad category. This shows that some levels of student background have become support for entrepreneurship.

Entrepreneurship is the key to achieving national independence. Entrepreneurship shows the independence of the nation, the entrepreneurial spirit cannot be obtained instantly and in a short time. The main asset or capital to become a successful entrepreneur is the existence of strong motivation within the individual and the courage to take risks, perseverance and persistence in running their business, so that they make entrepreneurs strong and not easily discouraged (Trihastuti et al., 2020). The courage of students in entrepreneurship is influenced

by the background of students. Student background in the form of who encourages students to become entrepreneurs. The results of the data analysis showed that the background of the biology education study program students at Jambi University was dominant in the good category 54.7% (110 out of 201 students). The good category is in the background of students in the Biology study program at the University of Jambi due to environmental factors around students. The environment around students has a big influence on the courage to start entrepreneurship, for example there are family members, friends and others who do entrepreneurship. Entrepreneurship is not only dominated by talented individuals but every individual who has the desire to become an entrepreneur and for entrepreneurship education is important because it helps overcome problems in business such as the decision to invest. Learning areas that can influence students' perceptions of entrepreneurial careers are finance, strategic planning, marketing and education and training management (Kurniasih et al., 2013).

Student experience in entrepreneurship

Table 4. Level of student experience in entrepreneurship

No	Range	attitude	Total	Means	Median	mode	Std. deviation	Min	Max
1	24-28	Very good	67						
2	18-23	Good	116						
3	13-17	Not good	17	21.82	21.00	21	3,408	12	28
4	7-12	Very Not Good	1						

Based on Table 3. shows that 33.3% (67 out of 201 students) are in the very good category, 57.7% (116 out of 201 students) are in the good category, 8.45% (17 out of 201 students) are in the bad category, and 0.49% (1 out of 201 students) is in the very bad category. This shows that some students already have experience in entrepreneurship. Many novice entrepreneurs start their businesses because they feel that there are many opportunities to start a business but in reality many novice entrepreneurs fail in their businesses due to a lack of knowledge, skills and entrepreneurial attitude and business instincts needed to succeed in a business (Nian et al., 2014). Student views on entrepreneurship education are related to their perceptions of innovation and the main task of higher education is to encourage innovation through entrepreneurship education. The University education system must provide an academic environment that can serve as a catalyst for high-tech start-ups (Wei et al., 2019).

Student perceptions of the Vision and Mission of the University of Jambi "a World Class Entrepreneurship University" cannot be separated from the experiences of students in doing entrepreneurship. Student experience in entrepreneurship is obtained from the student's personal experience and from the surrounding environment. The experience of students doing entrepreneurship is one of the realizations and supports the implementation of the independent learning curriculum (Kamaruzaman & Asrizal, 2020). Student experience makes it easier for students to understand entrepreneurial material given in the learning process (Wardayati, 2017). Entrepreneurship education can affect student cognition. Entrepreneurship education can increase perceptions of feasibility for entrepreneurship and an entrepreneurial career. Entrepreneurship education focuses on attitudes, intentions, and the firm-creation process.

Entrepreneurship education is an education and training activity with an education system that develops student entrepreneurial behavior (Afrianty, 2019).

Foster entrepreneurial spirit and activity in students so that after graduation students can become job creators rather than job seekers. The creation of this requires a central business institution that implements the entrepreneurship curriculum and is included in compulsory courses for every student. The purpose of implementing the entrepreneurship curriculum is to foster student motivation in entrepreneurship, increase student skills, especially in a sense of business and can build students' mental attitudes such as self-confidence, being able to find their identity, never giving up and working hard (Pinaryo, 2016). Entrepreneurship training for students has the goal of developing students so that upon graduation students can become entrepreneurs with the hope that emerging entrepreneurs can increase in Indonesia because currently entrepreneurship in Indonesia is still at a ratio of 3.1% which is still lower than neighboring countries, namely Malaysia, which has achieve a ratio of 5% (Said & Iskandar, 2020).

Entrepreneurs who have potential are generally motivated by achievement, the need for affiliation, the need for power, independence, the drive to take risks, the feeling of being in control, the power of one's own innovation, the need for decision making and commitment (Olszewska, 2015). Research conducted by Wibowo and Mardiyah (2018) shows that students already have the knowledge and responsibilities of young entrepreneurs. Young entrepreneurs have a role in the progress or decline of a country's economy because they can overcome existing unemployment. Knowledge in planning a business, building a team, how to organize business and management has also been mastered by students.

CONCLUSION AND SUGGESTION

CONCLUSION

In conclusion, the data analysis demonstrates that students' knowledge about the concept of biology being applicable in entrepreneurship is notably positive. About 43.3% of students fall into the "very good" category, and 55.7% are in the "good" category. This reflects that a considerable portion of students is already aware of the potential application of biology concepts in entrepreneurship. The analysis of students' knowledge regarding this matter is highly supportive of moving forward. It's not just limited to students involved in economics; it extends to Biology Education students, who understand that entrepreneurship aligns with the primary goal of the University of Jambi. Furthermore, the field of biology offers numerous opportunities for economic ventures, involving plants and animals. Medicinal herbs, spices, ornamental plants, organic vegetables, and various animal-related businesses like fish farming and poultry breeding present lucrative prospects. Entrepreneurship is becoming increasingly important in higher education, equipping students to apply their knowledge in real-world scenarios. The integration of entrepreneurship into the curriculum prepares students not only with in-depth subject knowledge but also with the ability to think creatively, adapt to change, and create opportunities in an ever-evolving job market.

In addition, the background and experience of students play a pivotal role in nurturing an entrepreneurial spirit. The data in Table 3 indicates that the majority of students have a supportive background, which influences their inclination towards entrepreneurship. Entrepreneurship education fosters innovation and encourages students to become creators

rather than job seekers. By developing skills, enhancing self-confidence, and promoting a sense of determination, students are better prepared to engage in entrepreneurial endeavors. The future of entrepreneurship in Indonesia and globally appears promising, with students already displaying knowledge and responsibility as young entrepreneurs. Overall, the data and analysis reveal a positive outlook regarding the integration of biology concepts into entrepreneurship and the enthusiastic readiness of students to embrace entrepreneurship as a viable career path. This underscores the importance of entrepreneurship education and its potential to contribute to economic growth, innovation, and individual empowerment.

SUGGESTION

As a suggestion for future researchers, it is recommended to delve further into the factors influencing students' perceptions of the integration of entrepreneurship in biology education. Moreover, further research could examine the concrete impact of knowledge and understanding of entrepreneurship on students' motivation and interest in starting their own businesses. An implicit recommendation from these findings is the need for the development of a biology education curriculum that places greater emphasis on entrepreneurial skills and knowledge, integrating practical entrepreneurial experiences into learning to prepare students for an entrepreneurial future.

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