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THE IMPACT OF BIOPRENEURSHIP PROJECT-BASED SCIENCE LEARNING ON STUDENTS' ENTREPRENEURIAL CREATIVITY

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ABSTRACT

Developing students' entrepreneurial creativity is essential to taking advantage of opportunities in new economic areas. The integration of biopreneurship in project-based learning offers an exciting solution. The impact of that learning model is measured by comparing pre- and post-intervention capabilities between groups that received and did not receive treatment. This study aims to determine the impact of biopreneurship project-based science learning on students' entrepreneurial creativity in the Mandalika Special Economic Zone. This research is quasi-experimental type, with a nonequivalent pretest-posttest control group design. The population of this study was junior high school students in the Mandalika Special Economic Zone. One hundred ninth-grade students from two schools were selected as research samples using a purposive technique. Students from each school were grouped into experimental and control classes. The experimental class applied biopreneurship project-based learning, while the control class implemented conventional science learning using lecture and discussion methods. Data was collected using entrepreneurial creativity tests, interviews, and questionnaires. Data analysis consisted of prerequisite tests (normality and homogeneity tests) and research hypothesis tests (t-test and Mann-Whitney test). Experimental class students had a significantly higher average entrepreneurial creativity than the control class students. This study concludes that biopreneurship project-based science learning significantly impacts students' entrepreneurial creativity.

Keywords: biopreneurship, entrepreneurial creativity, Mandalika special economic zone, project-based learning

INTRODUCTION

Education continues to change along with the challenges faced by human resources in the 21st century (Longmore et al., 2018). Various efforts must be made to produce human resources who are highly competitive in mastering knowledge and skills (Darmaji et al., 2019). Students need to develop entrepreneurial creativity to face intense competition in the economic and social fields, especially in countries currently experiencing a demographic bonus like Indonesia (Maydiantoro et al., 2021). Entrepreneurial creativity is essential for students because it optimizes potential, talents, and skills in developing life skills (Mbanefo & Ebokab, 2017). Entrepreneurial creativity can also facilitate the generation of ideas in solving life's problems (George et al., 2021) and lead to more effective actions in improving the quality of life (Aguirre et al., 2021).

Entrepreneurial creativity is students' ability to express ideas through creative thinking (Lynch et al., 2021), creating something that requires concentration, attention, will, hard work, and perseverance (Pardo-Garcia & Barac, 2020). According to Natty et al. (2019) and Fajri et al.

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(2023), four indicators, having a strong imagination, providing lots of ideas and suggestions, working independently, and enjoying trying new things, play an essential role in determining entrepreneurial creativity.

Entrepreneurial creativity is essential in helping students read business opportunities, design and implement business activities and conduct marketing and evaluation (Gibb, 2002). Shi et al. (2020) stated that entrepreneurial creativity significantly influences entrepreneurial intentions. However, the global creativity index shows that Indonesia still faces low creativity and innovation (Anjarwati et al., 2018), while creativity and innovation are positively correlated with entrepreneurial skills (Baghel et al., 2023; Salem & Beduk, 2021). This issue aligns with Aprilianty (2012), who stated that more than 60% of students have a low interest in entrepreneurship. Wardana et al. (2024) recommended that institutions and governments in Indonesia improve entrepreneurship-based educational approaches, emphasizing practice over theory, to contribute to students' entrepreneurial knowledge and creativity. Gazi et al. (2024) also stated that students' entrepreneurial knowledge and skills are developed through entrepreneurship-based education.

The Mandalika Special Economic Zone is an area developed by the Indonesian government to conduct economic functions on Lombok Island (Suryade et al., 2022). As a special economic zone, the Indonesian government has built various infrastructures, such as roads, hotels, and a motorbike racing circuit known as the Mandalika Circuit, to support the development of this new economic area. Every student needs to have an entrepreneurial mentality to take advantage of the development of new economic areas (Kusumajanto, 2015). Due to the unbalanced development of entrepreneurial innovation and the growth of Mandalika as a new economic location, the community is less equipped to capitalize on current economic prospects. Moreover, efforts to develop entrepreneurial creativity in formal education still need to be improved because learning focuses more on mastering knowledge and ignores aspects of entrepreneurial creativity. Rosyidi et al. (2023) showed that junior high school learning in Special Economic Zones is not optimal in terms of developing students' entrepreneurial creativity, as evidenced by the teaching modules not accommodating the development of students' entrepreneurial creativity and the learning strategies not facilitating the development of students' entrepreneurial creativity. Learning not integrated with daily manufacturing activities can cause students to have low entrepreneurial interest and creativity (Sumarti et al., 2018). This study suggests that in order to develop students' entrepreneurial creativity in the Mandalika Special Economic Zone, a hands-on learning approach is required. According to Djubaedi et al. (2023), the quality of education is improved by increasing its relevance to graduate employment.

Biopreneurship is a learning approach that integrates biology concepts with entrepreneurial concepts (Prasetyo & Kuntjoro, 2023). Biopreneurship uses living things as a marketed product to generate income (Aqil et al., 2021). According to Husni (2023), applying the biopreneurship approach to science learning can trigger the growth of students' interest in entrepreneurship. This opinion is strengthened by Agil et al. (2020) that learning with a biopreneurship approach increases students' entrepreneurial interest. Purnomo et al. (2023) further stated that applying biopreneurship in the Merdeka curriculum can support the development of students' entrepreneurial spirit and local wisdom. Thus, the biopreneurship approach can be relied upon as a strategy for economic development through education.

Applying the biopreneurship approach to learning requires an appropriate learning model that allows students to produce products for entrepreneurial activities. According to Sumarni and Kadarwati (2020), project-based learning can facilitate the development of students' entrepreneurial creativity. Project-based learning facilitates the development of students' knowledge and skills through structured inquiry activities that produce creative products (Yustina et al., 2020). Project-based learning provides students with significant knowledge and skills because students learn theory and do enjoyable practice (Hawari et al., 2020). Thus, integrating a biopreneurship approach in a project-based learning model can be a prospective learning strategy to develop students' entrepreneurial creativity.

Integrating biopreneurship into project-based learning is a mutually supportive combination in developing students' entrepreneurial creativity. The biopreneurship approach combines biology and entrepreneurship and includes aspects of technology, economics, and sociology, thus reflecting an interdisciplinary approach to project-based learning. However, Rosyidi et al. (2023) stated that this learning approach has yet to be applied to economic development centers such as Mandalika. According to Supriatno et al. (2023), there have been no reports on applying special learning models that design and run businesses related to biology principles, processes,

and products. Research related to entrepreneurial creativity has not been widely conducted, especially in new economic development areas. This study fills the literature gap regarding the biopreneurship approach in education, which has not been widely applied in new economic development areas. This study aims to determine the impact of biopreneurship project-based science learning on students' entrepreneurial creativity in the Mandalika Special Economic Zone.

METHODS

This research is quasi-experimental type, with a nonequivalent pretest-posttest control group design. The research design by Campbell and Stanley (1963) is presented in Table 1.

Table 1. Research Design

Class	Pretest	Treatment	Posttest
Experiment	O_1	X	O_2
Control	O_3	Y	O_4

Note:

$O_1 O_3$: Giving a pretest to determine students' entrepreneurial creativity before learning

$O_2 O_4$: Giving a posttest to determine students' entrepreneurial creativity after learning

X : Application of biopreneurship project-based science learning

Y : Application of conventional science learning

The population of this study was junior high school students in the Mandalika Special Economic Zone. The research sample was taken using a purposive technique, selecting schools whose students came from various sub-districts in the Mandalika Special Economic Zone and were studying biotechnology. Another aspect considered in selecting the research sample was the ease of access to students and their ability to provide data per research needs. This sampling technique obtained a sample of 100 ninth-grade students from Pujut 1 State Junior High School (SMP Negeri 1 Pujut) and Nurul Ijtihad Islamic Junior High School (MTs Nurul Ijtihad). Students from each school were grouped into experimental and control classes. This study had four groups of students, including one control and one experimental class at SMP Negeri 1 Pujut and one control and one experimental class at MTs Nurul Ijtihad. The research was carried out for two months. The experimental class applied biopreneurship project-based learning, while the control class implemented conventional science learning using lecture and discussion methods.

Biopreneurship project-based science learning was implemented on biotechnology, concentrating on food biotechnology. Learning activities discussed the impacts of conventional and modern biotechnology with three topics of project activities: making fermented cassava, virgin coconut oil (VCO), and nata de coco. Each topic was learned in three sessions, 120 minutes for each session. A biopreneurship project worksheet guided the implementation of project-based learning.

The entrepreneurial creativity test determined the impact of biopreneurship project-based learning on students› entrepreneurial creativity. The pretest was applied before, and the posttest was applied after learning to both experimental and control classes. The entrepreneurial creativity test was structured as an essay with ten items. The entrepreneurial creativity test items refer to the creativity indicators by Natty et al. (2019) and Fajri et al. (2023): having a strong imagination, lots of ideas and suggestions for a problem, the ability to work independently, and joy in trying new things. The entrepreneurial creativity test in this research has undergone validity and reliability tests. The Pearson correlation test shows that all test items are valid ($p < 0.05$) and reliable, with a Cronbach›s Alpha value of 0.84.

The t-test and Mann-Whitney test were applied to test the hypothesis that biopreneurship project-based science learning impacts students› entrepreneurial creativity. The significance level used in this test was 0.05. The use of these two statistical tests was based on the results of the Kolmogorov-Smirnov normality and the Levene homogeneity tests. The independent sample t-test was conducted on normally distributed data with homogeneous variance. In contrast, the Mann-Whitney test was carried out on data that was not normally distributed or homogeneous (Suciani et al., 2022). The impact of the treatment on students› entrepreneurial creativity was also tested from the increase in pretest to posttest scores. The increase in score is expressed by Normalize Gain (N-gain). The formula for getting N-gain refers to Hake (1999).

$$N - Gain = \frac{Posttest\ score - pretest\ score}{maximum\ score - pretest\ score} x\ 100$$

N-gain values are grouped into three categories according to Hake (1999), which are presented in Table 2.

Table 2. N-Gain Score Categories

Score Range	Conversion (%)	Category
$g < 0.3$	$g < 30$	Low
$0.7 < g \geq 0.3$	$70 < g \geq 30$	Moderate
$g \geq 0.7$	$g \geq 70$	High

Data was collected using interviews and questionnaires. Interviews were conducted to obtain information from teachers regarding the impact of biopreneurship project-based learning on students› learning motivation and creativity. Questionnaires were given to students to obtain responses to several statements regarding how biopreneurship project-based learning impacts the development of entrepreneurial creativity. Students responded to each statement by scoring 1 to 5, which means strongly disagree, disagree, neutral, agree, and strongly agree, respectively.

RESULTS AND DISCUSSION

The research results show that the average pretest scores of control and experimental class students ranged between 44 and 48, as presented in Table 3. The average pretest score of control and experimental class students was below 50, including in the low category. The result shows that students' entrepreneurial creativity before learning still needs to be improved.

The Kolmogorov-Smirnov test showed that the pretest data is normally distributed ($p > 0.05$), except for the pretest data for the experimental class at SMPN 1 Pujud, which is not normally distributed as indicated by a sig (p) value smaller than 0.05, while based on Levene's test the pretest data is the control and experimental classes have homogeneous variance with a p-value greater than 0.05. Since the data at SMPN 1 Pujud is not normally distributed, the Mann-Whitney non-parametric analysis was used to test the difference in average pretest scores between the control and experimental classes. Meanwhile, at MTs Nurul Ijtihad, the data is normally distributed and has a homogeneous variance, so the parametric t-test was used.

The Mann-Whitney test at SMPN 1 Pujud and the t-test at MTs Nurul Ijtihad showed that the average pretest scores of the control class and experimental class students were not significantly different, as indicated by the p-value based on the Mann-Whitney test and the t-test shows greater than alpha 0.05 (Table 3). This test showed that the initial entrepreneurial creativity of control and experimental class students is the same. Thus, the results of this pretest can serve as a guideline that if there is a difference in posttest results between the control and experimental groups, it may be due to the different treatments rather than differences in initial skills.

Table 3. Average Pretest Score of Students' Entrepreneurial Creativity

School	Number of Students		Mean Pretest		Normality Test sig.(*p*)		Homogeneity Test Sig.(*p*)	Hypothesis Test	
	C	E	C	E	C	E		Mann-Whitney Sig. (*p*)	t = 1.013 Sig. (*p*)
SMPN 1 Pujut	26	26	48	47	0.116	0.005	0.082	0.846	-
MTs Nurul Ijtihad	24	24	44	46	0.200	0.200	0.175	-	0.316

C = Control Class; E = Experimental Class.

The posttest shows that the average entrepreneurial creativity scores of control and experimental class students are significantly different. Control class students had a posttest average of 64 and 66, but experimental class students had higher posttest scores with an average of 75 and 77, as described in Table 4. The Kolmogorov-Smirnov test showed that the posttest data of control class students was normally distributed ($p > 0.05$). However, in the experimental class, only posttest data from MTs Nurul Ijtihad students had a normal distribution ($p = 0.220$). Levene's test showed that the data at SMPN 1 Pujut has a homogeneous variance with a p-value of 0.276, greater than 0.05. In contrast, the posttest data at MTs Nurul Ijtihad is not homogeneous ($p = 0.000$). Since not all classes have normally distributed data and homogeneous variances, the Mann-Whitney non-parametric test was used to analyze the difference in average scores between the experimental and control classes.

The Mann-Whitney Test obtained a $p = 0.000$, more diminutive than 0.05, as shown in Table 4. This result means students in the control and experimental classes have significantly different average posttest scores. Thus, this test concludes to accept the hypothesis, which states that biopreneurship project-based science learning

impacts students' entrepreneurial creativity. In other words, the results of this hypothesis test indicate that biopreneurship project-based science learning has a more positive impact on students' entrepreneurial creativity than traditional learning methods.

Table 4. Average Posttest Score of Students' Entrepreneurial Creativity

School	Number of Students		Mean Posttest		Normality Test sig.(*p*)		Homogeneity Test	Hypothesis Test
	C	E	C	E	C	E	Sig.(*p*)	Mann-Whitney Sig. (*p*)
SMPN 1 Pujut	26	26	64	77	0.067	0.004	0.276	0.000
MTs Nurul Ijtihad	24	24	66	75	0.104	0.220	0.000	0.000

C = Control Class; E = Experimental Class.

The experimental class had a higher average posttest score than the control class. In contrast, the average pretest scores for the two classes were not significantly different. Therefore, this result indicates that biopreneurship project-based learning impacts students' entrepreneurial creativity. The results of this research are supported by the findings that the project-based learning model causes a significant increase in students' learning outcomes and creativity (Furi et al., 2018); Makrufi et al., 2018; Wulandari et al., 2019).

The increase in pretest to posttest scores further demonstrates how biopreneurship project-based learning influences students' entrepreneurial creativity. The magnitude of the increase in scores from pretest to posttest was obtained from the N-gain score (Table 5). The research results show that the average N-gain of the control and experimental classes is significantly different. The control class had an average N-gain between 29.2 and 29.9, included in the low category. In contrast, the experimental class had an average N-gain between 53.3 and 56.4, included in the moderate category.

The Kolmogorov-Smirnov test showed that the N-gain data for the control and experimental classes were normally distributed (p = 200). Based on Levene's test, the N-gain data at SMPN 1 Pujud has a homogeneous variance (p = 520), but at MTs Nurul Ijtihad is not homogeneous (p = 0.000). The t and Mann Withney test results show a sig (p) value of 0.000, smaller than alpha 0.05. This result shows a significant difference between the average N-gain scores of the control and experimental classes.

Table 5. Average N-gain Score of Students' Entrepreneurial Creativity

School	Number of Students		N-gain		Normality Test Sig. (*p*)		Homogeneity Test	Hypothesis Test	
	C	E	C	E	C	E	Sig. (*p*)	t = 9.148 Sig. (*p*)	Mann-Whitney Sig. (*p*)
SMP Negeri 1 Pujut	26	26	29.9	56.4	0.200	0.200	0.520	0.000	-
MTs Nurul Ijtihad	24	24	29.2	53.3	0.200	0.200	0.000	-	0.000

C = Control Class; E = Experimental Class.

The hypothesis test based on the N-gain value confirmed that biopreneurship project-based learning significantly increases students' entrepreneurial creativity. Some arguments that can support the hypothesis results are as follows: First, project design activities caused a higher increase in entrepreneurial creativity in the experimental class. Designing projects contributes to new ideas in solving problems, triggers the emergence of many ideas, and causes meaningful learning because it gives students the freedom to apply their creative ideas when working on projects (Wulandari et al., 2019). Second, project-based learning facilitates students to learn independently and practice responsibility, while for teachers, project-based learning can be a medium to make it easier to explain learning material. Implementation of project-based learning will foster creative and effective learning (Natalia et al., 2023). Prihatiningrum et al. (2020) added that biopreneurship projects in biology learning led to increased learning outcomes, creativity, and interest in entrepreneurship.

Several activities in biopreneurship project-based learning triggered students' entrepreneurial creativity. First, the triggering questions raised at the beginning of learning relate to entrepreneurship, such as "What products can be made from

coconuts and cassava?" "How do you package the product so that buyers are interested?" These triggering questions stimulate students' entrepreneurial creativity and provide an overview of business opportunities they can pursue. Apart from that, these questions can also stimulate students' imagination and exploration in providing many answers to the potential of a creative product and ideas related to business opportunities that can be pursued. Second, project design activities and group discussions also impact the variety, quantity, and quality of answers, indirectly and significantly increasing students' creativity. Apart from that, designing project activities can train students' creativity in planning and designing project activities. Third, product creation activities and monitoring project completion can train students to work independently and collaborate, both skills needed in entrepreneurship. Fourth, making creative products is something new for students, where something new tends to be liked by students, so it positively impacts the development of students' entrepreneurial creativity and interest in entrepreneurship. Fifth, in presentation activities, students are trained to communicate project results and respond to questions and answers from other students. This activity can increase students' entrepreneurial creativity in communicating, digesting, responding to questions, and developing ideas for existing problems. Sixth, in reflection and evaluation activities, students are trained to remember and reflect on things they have learned, encouraging them to generate new ideas for subsequent project activities. Based on these learning activities, the biopreneurship project approach provides the broadest possible opportunities for students to develop their entrepreneurship creativity. This statement is supported by Aparicio et al. (2019), who stated that entrepreneurship-based learning provides opportunities for students to become the leading agents in learning.

The learning steps in this research were arranged as a biopreneurship project worksheet. This worksheet directed students to combine the conclusions that emerge from solving problems in the biopreneurship project with the results of critical analysis of the learning resources they obtain. In addition, in the worksheet, students were presented with questions about entrepreneurship. According to Sari and Wulanda (2019), asking questions in the form of concept applications and analysis of creative products that can be turned into entrepreneurship stimulates students' creativity in completing projects. Presenting applicable entrepreneurial problems in learning encourages students to gain complete knowledge and impacts increasing entrepreneurial intentions (Amir et al., 2024). Integrating entrepreneurial concepts in education will encourage positive perceptions of entrepreneurship (Fellnhofer, 2017). More specifically, Hien and Cho (2018) said that students tend to increase their intention to start a business when they study entrepreneurship.

Biopreneurship project-based science learning has the benefit of encouraging students to think and work hard and facilitating students to generate ideas to design and complete tasks in their own way. Misra (2021) stated that project-based science learning provides opportunities for students to practice planning and designing project activities and communicating their learning activities through presentations and scientific reports. Working on projects facilitates students expressing ideas and trains students' creative thinking skills (Ritter & Mostert, 2017). Project-based science learning makes students more motivated and happier in the learning process, which has an impact on their creative thinking skills (Puspita et al., 2022), promoting active learning (Le, 2018) and improving learning outcomes (Rokhmawati & Faizati, 2021; Sukaesih, et., 2022).

Four indicators of entrepreneurial creativity are the focus of this research: (1) having a strong imagination; (2) providing many ideas and suggestions for a problem; (3) working independently; (4) enjoying trying new things. Together, these indicators describe an individual's ability to generate innovative solutions, take initiative, explore new experiences, and envision creative ideas, which are critical components of creativity in entrepreneurship. The results of the N-gain analysis of students' entrepreneurial creativity on four indicators are presented in Figure 1.

Based on Figure 1, the N-gain of experimental class students is higher than that of the control class on the four indicators of entrepreneurial creativity. Except for Indicator 2 at SMPN 1 Pujut, the increase in entrepreneurial creativity of experimental class students was in the moderate category. In contrast, control-class students generally had increased entrepreneurial creativity in the low category. One factor supporting these results is that biopreneurship project-based science learning provides direct learning experiences for students to design activities that produce biotechnology-related products. Students' involvement in designing biopreneurship projects influences their action patterns to be consistently based on scientific matters (Zaerina et al., 2022) by making them like scientists and creative entrepreneurs in science learning activi-

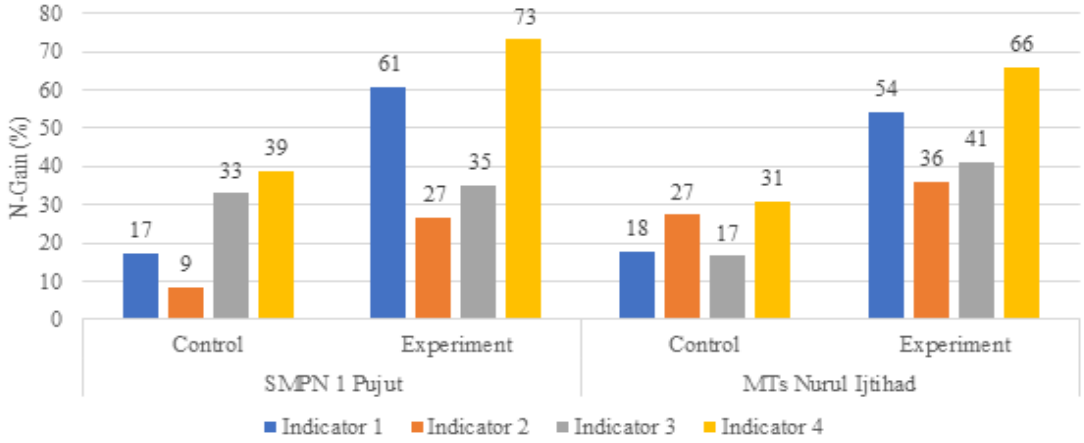

Figure 1. N-Gain on Entrepreneurial Creativity Indicators

ties (Sudarmin et al., 2019). According to Aqil et al. (2020), the development of learning oriented toward making biotechnology products integrated with the concept of entrepreneurship has an impact on increasing interest in entrepreneurship. According to Shi (2020), the emergence of interest in entrepreneurship is the impact of entrepreneurial creativity.

In the experimental class, entrepreneurial creativity increased in Indicators 1 and 4 in the high category. The N-gain score for Indicator 1 is still included in the moderate increase in entrepreneurial creativity category. This score is close to the criteria for a high increase, while the increase in student creativity in the control class is in a low category. The development of the imagination skills of experimental class students can be stimulated by providing trigger questions when starting to learn about biopreneurship projects and allowing students to collaborate in designing projects for making biotechnology products. This argument aligns with Umar (2018), who states that imagination, as part of creative thinking skills, is more easily achieved by practicing making products. The integration of learning with entrepreneurial practices increases the emergence of entrepreneurial aspirations (Shahriar et al., 2024).

Indicator 4 states that students like trying new things and that the experimental class has increased entrepreneurial creativity scores in the high category. A high increase in N-gain scores on this indicator can occur because students are given exciting new experiences when working on projects that produce biotechnology products such as fermented cassava, virgin coconut oil (VCO), and nata de coco. In working on this project, students can assimilate concepts they already understand in everyday life with new ideas related to biotechnology products. Students' success in assimilating everyday experiences with new experiences in biopreneurship projects causes them to like trying new things and can even trigger the emergence of innovation. Innovation contributes significantly to entrepreneurial creativity (Shahzad et al., 2021). Novianto et al. (2018) said that project-based learning provides a direct experience, potentially increasing students' creativity. Good creativity causes students to be inquisitive about new experiences (Zhan et al., 2022). Creativity also causes students to be competent in facing the new challenges they face (Risopoulos-Pichler et al., 2020).

The interviews with teachers in experimental classes show that biopreneurship project-based learning increases students' interest and motivation to learn, as shown by students' increased activity and creativity when working on biopreneurship projects. This is in line with Nurdyansyah and Fahyuni (2016) that students' interest and motivation are fostered if they are given a series of learning activities starting from answering triggering questions, discussing problems with their group to concluding the most relevant opinions, where this series of activities occurs in biopreneurship project-based learning. The teacher's opinion is strengthened by the questionnaire results from 50 experimental class students presented in Table 6.

Based on the questionnaire, more than 50% of students gave a positive response to the biopreneurship project-based learning, which was indicated by the opinion that students agreed with the statement which stated that biopreneurship project-based learning encouraged students to learn actively, increased students' entrepreneurial creativity, and made science learning more enjoyable. This research aligns with Janssen and Metrakos (2023), who state that bio-entrepreneurship learning positively affects students'

Table 6. Student Responses to Biopreneurship Project Learning

No	Statement	Student Responses (%)				
		1	2	3	4	5
1	Biopreneurship project-based learning facilitates students in developing entrepreneurial creativity.	2	2	30	42	24
2	Biopreneurship project-based learning enhances students' entrepreneurial creativity.	0	2	14	22	62
3	Biopreneurship project-based learning encourages students to be more active in their learning.	0	0	0	46	54
4	Biopreneurship project-based learning encourages students to be more active and perform better in group learning.	4	2	14	60	20
5	Biopreneurship project-based learning makes science learning more enjoyable.	0	0	8	32	60

Note: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree

entrepreneurial attitudes. According to Achmad et al. (2024), applying project-based learning to biotechnology material increases students' understanding, creative thinking, and ecopreneurship skills. The results of this research are also in line with Rati et al. (2017), who concluded that project-based learning affects creativity and improves learning outcomes. This opinion is supported by Portuguez Castro et al. (2021), who stated that developing entrepreneurial experience and skills in schools significantly impacts the generation of sustainable business ideas aligned with solving local and global problems, so it is recommended as an alternative learning model in schools.

CONCLUSION

Biopreneurship project-based science learning has a significant impact on increasing students' entrepreneurial creativity. This increase in creativity mainly occurs in indicators of being happy to try new things and having a strong imagination. Implementing biopreneurship project-based science learning is essential to deepen entrepreneurial literacy and develop entrepreneurial creativity, especially in areas where the economy is developing rapidly or targeted by the government as centers for local economic development, such as the Mandalika Special Economic Zone.

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