

Self-Efficacy in Entrepreneurship for Science Teacher Candidates: A Comparative Study of Gender and Semester

M. Harja Efendi¹, M. Khairul Wazni^{2*}, Agus Muliadi³

¹Department of Biology Education, Universitas Islam Negeri Mataram, Mataram, Indonesia.

²Department of Biology Education, Universitas Hamzanwadi, Selong, Indonesia.

³Department of Biology Education, Universitas Pendidikan Mandalika, Mataram, Indonesia.

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Corresponding Author:

Agus Muliadi

mkhairulwazni@hamzanwadi.ac.id

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Abstract: This study aims to determine differences in student perceptions about self-efficacy in the field of entrepreneurship based on gender and semester. This study is an exploratory research with 35 biology education students as subjects. The research instrument used was a closed questionnaire with degraded answers according to a Likert scale that had been declared valid. Analysis of research data used is descriptive statistics and inferential statistics with t-test and Anova test at a significance level of 5%. The results of the study show that (1) students' perceptions of self-efficacy in the field of entrepreneurship has an average score of male students at 3.16 with the Good category and women at 3.10, while semester IV students are at 3.09 with the Good category, semester VI is at 3.12 with the Good category, and semester VIII of 3.15 in the Good category; (2) there is no significant difference in students' perceptions of self-efficacy in the field of entrepreneurship between male and female gender, as evidenced by a significance value of 0.716 greater than the alpha testing value of 0.05 (>0.05); (3) there is no significant difference in the perceptions of semester IV, VI, VIII students about self-efficacy in the field of entrepreneurship as evidenced by a significance value of 0.959 greater than the alpha testing value of 0.05 (>0.05).

Keywords: Entrepreneurship; Gender; Self-efficacy; Semester

Introduction

In the current era of the Industrial Revolution 4.0, competition in the world of work is getting tougher (Agustiani et al., 2022), because the many roles of workers are starting to be replaced by digitalization technology, machines or robots. Nevertheless, in the opinion of Cropley (2020) that humans still have a strategic role and cannot be separated from the world of production. The role of humans cannot be replaced because machines can function properly when controlled and controlled by humans. This is confirmed by Normawati & Margono (2016) that the 21st century currently demands human resources to be creative, competitive, skilled, and independent. Human resources are expected to have 21st century skills known as 4C skills, namely Critical Thinking, Creativity, Collaboration, and Communication (Afwan, Suryani &

Ardianto, 2020; Maulidah, 2019; Setiawan, 2017). Thus, there is a need for structured and systematic efforts to develop quality human resources and one of them is through education that is oriented towards life skills (Wahyuni & Hidayati, 2017).

Education oriented to life skills is an essential effort to develop student knowledge and skills, shape character and responsibility, and provide motivation to build achievement optimally (Rina & Kamila, 2020). This is in accordance with the opinion of Sudarsana (2017) that the development of life skills is very important for building self-help behavior, so it must be carried out in a structured and systematic manner in order to provide "provision" for students after graduation (Noor, 2015). Thus, developing life skills for students requires structured efforts through entrepreneurship education in higher education (Muliadi et al., 2022). This policy is essential, bearing in mind that in 2022 Indonesia's

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Human Development Index will rank 130 out of 199 countries in the world (Shanti, 2023). Another social phenomenon that still burdens Indonesia today is the problem of high labor force and disruption that has not been completely resolved (Muliadi & Mirawati, 2020). The Central Bureau of Statistics in February 2022 noted that the open unemployment rate was 5.83% of the total working age population in Indonesia and 14% of them were university graduates.

The fact of the unemployment rate proves that college graduates are still not competitive and independent (Muliadi, Mirawati & Prayogi, 2021) and are still oriented as job seekers not as job creators (Indriyatni, Wahyuningsih & Purwanto, 2014). The level of the labor force in Indonesia is still quite high, due to the dependence of university graduates on job opportunities (Santoso & Handoyo, 2019). This is in contrast to public opinion so far, which has hoped that graduates of higher education can become agents of change for the surrounding community (Muliadi, 2020). Thus, developing knowledge and skills in the field of entrepreneurship is a concrete solution so that students can become graduates who are creative, competitive, and independent (Mirawati, Wardana, & Sukaatmadja, 2016), and can reduce unemployment and have a positive impact on the nation's economy (Listyawati, 2017).

According to Munawar & Supriatna (2018), entrepreneurial skill is one of the important competencies to be developed for students in tertiary institutions to avoid the problems of unemployment and job seekers. The development of entrepreneurial skills must be carried out systematically and consistently (Muliadi, Sarjan & Rokhmat, 2022; Muliadi & Mirawati, 2020), bearing in mind the important role of entrepreneurship for the future of students and the economic development of the Indonesian nation (Wardhani, Riani & Susilaningsih, 2018; Paramita, 2017). According to Afwan, Vahlia & Sholiha (2022), economic growth can be increased by efforts to produce entrepreneurs who are capable of innovation and are globally competitive. This is supported by the results of Darwanto research (2012), namely (1) increasing the number of entrepreneurs; (2) creating new jobs to reduce unemployment; (3) increasing national economic growth and people's income. Thus, in the long term it can stabilize the economy as a result of the growth of new businesses in various fields (Slamet, Tunjungsari & Le, 2014).

The Indonesian government has launched the National Entrepreneurship Movement since February 2011 to encourage people, especially the younger generation, to be active in entrepreneurship (Setyawan, 2016; Mirawati, Wardana & Sukaatmadja, 2016). This policy has been implemented by the government in

tertiary institutions in a structured and systematic manner (Muliadi, Mirawati & Prayogi, 2021), by requiring entrepreneurship learning (Muliadi, Asri & Lestarini, 2020), so that graduates can have entrepreneurial skills and are confident to pursue them (Primandaru, 2017; Darmawan & Warmika, 2016; Fatimah, 2013). Entrepreneurship education is currently a compulsory subject in the curriculum of the Biology Education Study Program at the Mandalika University of Education which aims to facilitate the development of life skills for students in the field of entrepreneurship. Entrepreneurial learning is expected to develop the knowledge and confidence (self-efficacy) of biology students to become entrepreneurs (Wardhani, Riani & Susilaningsih, 2018).

According to Subagio, Muliadi & Sutarto (2021) entrepreneurship education can facilitate students in a structured and systematic way in developing knowledge, attitudes, self-efficacy, and interest entrepreneurship (Muliadi, 2020; Supeni & Efendi, 2017; Setyawan, 2016). Suryana (2011) explains that "entrepreneurship is not only born but also made", meaning that entrepreneurship is not only innate talent or mere field experience, but can also be learned and taught. Entrepreneurship education is one of the important factors that influence success in cultivating one's entrepreneurial spirit (Dewi, 2016). Entrepreneurial knowledge and skills obtained in entrepreneurship education can strengthen students' self-efficacy for entrepreneurship (Muliadi, Mirawati & Prayogi, 2021; Hattab, 2014). According to Indrawati, Herkulana, & Syharud (2017) student self-efficacy in entrepreneurship is influenced by knowledge and attitude as a form of positive or negative belief in an entrepreneurial behavior. Student self-efficacy Entrepreneurship can be cultivated and developed from an early age through the educational process on campus, family, and the surrounding environment (Srigustini, 2014; Muliadi & Mirawati, 2020).

Santi, Hamzah & Rahmawati (2017) explained that in the Theory of Planned Behavior (TPB) emphasized the existence of a variable Perceived Behavior Control or operationally it is called self-efficacy, which is a form of a person's self-confidence in entrepreneurship from the internal side. Thus, self-efficacy students to pursue the field Entrepreneurship is a deliberate decision and can be planned, one of which is through entrepreneurship education (Wilson, 2007). According to Alma (2011), there are two factors that influence attitudes and self-efficacy for entrepreneurship, namely personal attributes and personal environment. Gender is a personal attribute that has a role in moderating student self-efficacy in entrepreneurship (Setyawan, 2016). Wongnaa & Seyram (2014) explained that the gender factor has a significant positive effect on student

decisions in assessing the importance of entrepreneurship. Gender is a productive variable that can be used to find out some information (Muliadi, Imran & Sutarto, 2021). There are biological differences between male and female students which enable them to develop different attitudes and behaviors (Bae et al., 2014). Meanwhile, one form of personal environment is the student semester level because students who are in higher semesters will have more knowledge and experience, so that it can influence their attitude towards learning entrepreneurship (Nugraheni, 2020). Thus, an exploratory study is needed to determine the comparison of student self-efficacy in the field of entrepreneurship in terms of gender and semester level factors.

Method

This research is an ex post facto study using an exploratory descriptive approach (Muliadi & Mirawati, 2020; Muliadi, 2020a), to describe differences in student self-efficacy in the field of entrepreneurship in terms of gender and semester level factors. Ex post facto research is used because this research examines causal relationships without manipulation or treatment by researchers, but researchers only record data from activities that have occurred (Sugiyono, 2017; Arikunto, 2016; Singarimbun & Sofyan, 2009). Respondents to this study were 35 students of biology education at the Mandalika University of Education who were obtained using the convenience sampling technique because it considered the accessibility and willingness of respondents to fill out online questionnaires (Fink, 2011).

The research instrument used was a closed questionnaire with degraded attitude answers according to the Likert scale (Muliadi, 2020b) presented in the media google form (Adha et al., 2020). The instrument was compiled referring to indicators of student perceptions about student self-efficacy in the field of entrepreneurship. The questionnaire was developed in 7 statements by adopting the questionnaire developed by Perwitasari (2017) and Muliadi & Mirawati (2020). The developed questionnaire has been validated by experts and declared valid.

Research data were analyzed using quantitative descriptive and inferential statistics. Quantitative descriptive analysis was used to describe data on student perceptions of self-efficacy in the field of entrepreneurship in terms of gender. To interpret student self-efficacy profile data, the assessment criteria developed by Muliadi & Mirawati (2020) are used as presented in Table 1.

Table 1. Criteria for interpreting student perceptions

| Average score (\bar{p}) | Interpretation |
|-----------------------------|----------------|
| 3.51 - 4.00 | Excellent |
| 2.51 - 3.50 | Good |
| 1.51 - 2.50 | Fair |
| 1.00 - 1.50 | Less |

Inferential statistical analysis was used to determine differences in student self-efficacy in the field of entrepreneurship based on gender and was analyzed using t-test at the significance level 5% with the formulation of a statistical hypothesis, namely $H_0: \mu_1 = \mu_2$ (there is no significant difference in the self-efficacy of male and female students in the field of entrepreneurship) and $H_1: \mu_1 \neq \mu_2$ (there is a significant difference in the self-efficacy of male and female students in entrepreneurial field). While differences in student self-efficacy based on semester level were analyzed using the Anova test (Analysis of Variance) at a significance level of 5% with the formulation of a statistical hypothesis, namely $H_0: \mu_1 = \mu_2$ (no significant difference in student self-efficacy between semesters IV, VI, VIII) and $H_1: \mu_1 \neq \mu_2$ (there is a significant difference in student self-efficacy between semesters IV, VI, VIII). If the results of the analysis are significant or the p-value of the t-test and Anova test is less than 0.05, then H_0 is rejected and H_1 is accepted or vice versa.

Result and Discussion

Description of student perception data regarding self-efficacy in the field of entrepreneurship based on gender is presented in Table 2.

Table 2. Student perception data on self-efficacy in entrepreneurship based on gender and semester

| Variable | N | Σ Score | \bar{p} | Category |
|----------|-------|----------------|-----------|----------|
| Gender | Man | 44,29 | 3,16 | Good |
| | Woman | 65,14 | 3,10 | Good |
| Semester | IV | 15,43 | 3,09 | Good |
| | VI | 53,00 | 3,12 | Good |
| | VIII | 41,00 | 3,15 | Good |

Based on Table 2, it is known that the average score of student perceptions about self-efficacy in the field of entrepreneurship is that male students are 3.16 in the Good category and female students are 3.10 in the Good category. While the average score of the fourth semester students was 3.09 in the Good category, the VI semester was 3.12 in the Good category, and the VIII semester was 3.15 in the Good category. The description of the data is emphasized in the following Figure 1.

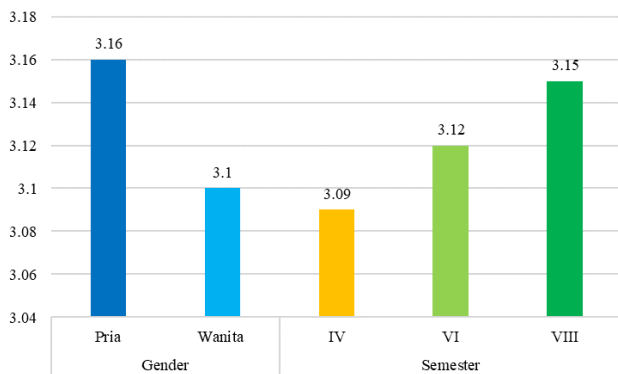


Figure 1. Average student perceptions of self-efficacy in entrepreneurship based on gender and semester

The inferential statistical analysis used was the t-test and the Anova test, but first the prerequisite tests were carried out, namely the normality and homogeneity tests. The results of the homogeneity test (Levenes test) and normality (Kolmogorov-Smirnov's test) are presented in Table 3.

Table 3. Homogeneity and normality test results

| N | Homogeneity | | Normality | |
|----|--------------------------------|-------|---------------------------------|-------|
| | Levenes Statistical test score | Sig. | Kolmogorov-Smirnov's test score | Sig. |
| 35 | 0.016 | 0.901 | 0.544 | 0.929 |

The results of the homogeneity test (Levenes test) and normality (Kolmogorov-Smirnov's test) showed a significance value of 0.901 and 0.929, respectively, both of which were greater than the alpha testing value of 0.05, so it was concluded that the variance of the data was homogeneous and normally distributed.

Differences in student self-efficacy in the field of entrepreneurship based on gender were analyzed using the t-test (independent sample test) with the results as presented in Table 3.

Table 3. t-test results (independent sample test)

| Variances | t-test for Equality for Means | | | |
|-----------|-------------------------------|----|-------|------------|
| | t | df | Sig. | Mean diff. |
| Gender | 0.368 | 33 | 0.716 | 0.06071 |

Based on the results of the t-test in table 3, it shows that the significance value of 0.716 is greater than the alpha testing value of 0.05 (>0.05), so that H₁ is rejected and H₀ is accepted, which means that there is no significant difference in student perceptions of self-efficacy in the field of entrepreneurship between male and female sexes.

Differences in student self-efficacy based on semester level were analyzed using the Anova test

(Analysis of Variance) with the results as presented in Table 4.

Table 4. Anova test results

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|----|-------------|-------|--------------|
| Between Groups | 0.020 | 2 | 0.010 | 0.041 | 0.959 |
| Within Groups | 7,575 | 32 | 0.237 | | |
| Total | 7,595 | 34 | | | |

Based on the results of the Anova test in table 4, it shows that the significance value of 0.959 is greater than the alpha testing value of 0.05 (>0.05), so that H₁ is rejected and H₀ is accepted, which means that there is no significant difference in student perceptions of semester IV, VI, VIII regarding self-efficacy in the field of entrepreneurship.

The results of this study explain that (1) biology education students who are both male and female in semesters IV, VI, VIII have self-efficacy in the field of entrepreneurship in the Good category; (2) there is no significant difference in student self-efficacy in the field of entrepreneurship based on gender and semester level. The findings of this study indicate that all biology education students have a good level of confidence to pursue entrepreneurship, both male and female. This is supported by the results of Muliadi research (2020) which explains that there is no difference in entrepreneurial attitudes between male and female students because they get the same strengthening of entrepreneurial competence in the learning process. Other research also confirms the same results, namely (1) Yunilasari & Rahardjo research (2016) explains that gender has no effect on students' entrepreneurial abilities and interests, (2) Damayanti research (2013) explains that there is no significant difference in entrepreneurial abilities and interests between college students boy and girl.

The results of this study further confirm that the average perception score indicates that students in semester VIII have higher scores than students in semesters IV and VI, which means that the higher the semester the better the student's perception of self-efficacy in the field of entrepreneurship. The results of this study are supported by the results of research by Suhirman & Muliadi (2023) that the semester level of students influences their knowledge and experience in attending education, so that they can determine self-efficacy in entrepreneurship. Jabali, Supriyono & Nugraheni (2020) emphasized that a student's semester level is a personal environment factor in determining student self-efficacy and attitudes in the field of entrepreneurship. Thus, student knowledge about entrepreneurship is the main factor influencing student

self-efficacy quite well in the field of entrepreneurship. This is in accordance with the opinion of Muliadi, Mirawati & Prayogi (2021) and Hattab (2014) that entrepreneurial knowledge and skills obtained in entrepreneurship education can strengthen students' confidence in entrepreneurship. Student self-efficacy Entrepreneurship can be cultivated and developed from an early age through the educational process on campus, family, and the surrounding environment (Srigustini, 2014; Muliadi & Mirawati, 2020).

Entrepreneurship learning has a positive impact on student self-efficacy in the field of entrepreneurship, because it can strengthen students' knowledge, skills, and interest in entrepreneurship (Muliadi, Mirawati & Prayogi, 2021). The results of this study prove the important role of entrepreneurship education courses to develop students' knowledge, skills, interests, and confidence in entrepreneurship. This is supported by the results of previous research, namely (1) the results of research by Santi, Hamzah & Rahmawati (2017) explaining that entrepreneurship education has a positive and significant influence on entrepreneurial beliefs and intentions, (2) research results by Turker & Selcuk (2009) explaining that education Entrepreneurship has a positive influence on students in Turkey. This was emphasized by Wilson (2007) that student self-efficacy in the field of entrepreneurship is a deliberate decision and can be planned and developed through entrepreneurship education. This is in accordance with the explanation of Theory of Planned Behavior (TPB) that self-efficacy is a variable of Perceived Behavior Control, which is a form of a person's self-confidence for entrepreneurship from the internal side (Santi, Hamzah & Rahmawati, 2017).

Conclusion

Based on the results of the research and discussion above, it can be concluded that (1) students' perceptions of self-efficacy in the field of entrepreneurship has an average score of male students at 3.16 with the Good category and women at 3.10, while semester IV students are at 3.09 with the Good category, semester VI is at 3.12 with the Good category, and semester VIII of 3.15 in the Good category; (2) there is no significant difference in students' perceptions of self-efficacy in the field of entrepreneurship between male and female gender, as evidenced by a significance value of 0.716 greater than the alpha testing value of 0.05 (>0.05); (3) there is no significant difference in the perceptions of semester IV, VI, VIII students about self-efficacy in the field of entrepreneurship as evidenced by a significance value of 0.959 greater than the alpha testing value of 0.05 (>0.05).

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Author Contributions

M. Harja Efendi: developing research topics and determination of methodology.

M. Khairul Wazni: writing draft articles, revising, and editing final articles.

Agus Muliadi: browsing and mapping literature related to the research topics.

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Conflicts of Interest

The authors declare no conflict of interest.

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