

The Influence of Welding and Plate I Practice Learning Outcomes on the Entrepreneurial Interest of Students

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Abstract— The aim of this study is to examine the impact of Welding and Plate I Practice learning outcomes on the entrepreneurial interest of students from the Faculty of Mechanical Engineering Education, Faculty of Engineering, State University of Makassar. This study employs an empirical pragmatic correlational research design with a quantitative approach. The population consists of 46 students, and a sample of 44 students was selected through random sampling. Data were collected using documents and questionnaires to assess variable Y (entrepreneurial interest). Data analysis was performed using the mean with normality and linearity tests, while hypothesis testing was conducted through simple regression analysis. The results of the study indicate a positive influence of Welding and Plate I Practice learning outcomes on the entrepreneurial interest of students from the Faculty of Mechanical Engineering Education, Faculty of Engineering, State University of Makassar, as indicated by an R value of 0.293 (29.3%).

Keywords— Enterpreinership, Interest, Welding and Plate I, course, Learning outcomes.

I. INTRODUCTION

Indonesia is currently a developing country that is actively undertaking various development efforts, particularly in the industrial sector. One approach to addressing industrialization is through entrepreneurship. Regardless of how one views it, entrepreneurship can provide opportunities for both individuals and others. Given the increasing number of job seekers today, there is also a growing desire among the population to find employment, which consequently leads to a higher rate of unemployment. Unemployment refers to individuals who are without work but are actively seeking employment, or those who are not seeking work because they feel it is unlikely that they will find a job.

Entrepreneurship refers to the activities or actions undertaken by an individual or a group of individuals to start a business with the aim of generating profit. According to Kasmir (2010: 16), entrepreneurship is the ability to create business activities that require continuous creativity and innovation to discover something new that differs from what already exists. In entrepreneurship, an entrepreneur must be willing to take risks and optimize available resources, such as materials, intellectual capital, time, and creative skills, to create a product or business that benefits both themselves and others.

To address the issue of unemployment, it is necessary to foster entrepreneurship. Entrepreneurship aims to develop an attitude and desire for independence in order to improve one's quality of life without relying on others. As stated by Alma (2013: 1), "The more advanced a country is, the more educated its people become, the more unemployment there is, and the more important entrepreneurship becomes in the world. Development will be more successful if supported by entrepreneurship." This can create job opportunities, as the

capacity of the government is limited. The government cannot handle every aspect of development, as it requires substantial budget, personnel, and oversight.

In accordance with Bygrave's perspective (as cited in Alma, 2013: 9), entrepreneurial interest is influenced by several factors, including: 1) personal factors, which are related to aspects of personality; 2) environmental factors, which pertain to the physical environment; and 3) social factors, which relate to relationships with family, among others. According to Nurchotim (2012), the factors affecting the interest in starting a business include: 1) internal factors, such as the need for income, motivation, self-esteem, happiness, and attention; and 2) external factors, including family environment, community environment, opportunities, and education. In this study, the author focuses on family environment, learning outcomes in the welding technology course, and entrepreneurial interest as the variables.

The government must consider various factors that influence entrepreneurial interest in preparing students for the workforce and reducing unemployment rates. One such factor is education; therefore, Universitas Negeri Makassar, as a higher education institution, should make efforts to improve the quality of education in order to produce professional and competent graduates. The quality of education and graduates from Universitas Negeri Makassar (UNM) can be good if the knowledge, skills, and attitudes of its graduates contribute effectively to community development.

The Faculty of Engineering at Universitas Negeri Makassar is an educational institution that targets both academic and non-academic personnel. As an institution that develops several faculties, including various research programs, its organizational objective is to produce graduates and professionals in the fields of technical and technological

education, with a particular focus on mechanical engineering vocation.

Mechanical engineering students are part of a program designed to prepare them for roles in both educational and non-educational sectors. Upon completing their education, students are expected to acquire competencies in both areas, which serve as indicators of their ability to perform as professional educators in vocational schools or as non-educational professionals. To meet these expectations, students are provided with a series of theoretical and practical courses aimed at training them in the application of both theory and practice as sources of knowledge and their subsequent implementation in the workplace. Additionally, students are expected to achieve satisfactory academic results, even in specific professional fields.

Students who achieve good academic results have a greater opportunity to master specific areas of interest. The mastery of knowledge and skills developed during the learning process is often reflected in the exam scores provided. Returning to the distinction between educational and non-educational personnel, students who are to become educators must attain the learning outcomes associated with their field, specifically by mastering one or two areas of expertise. This mastery will support the students in becoming professionals in their chosen fields, such as creating their own job opportunities by starting a business in their area of expertise.

Based on the initial observation, the data collected indicates that a significant number of students are less interested in entrepreneurship due to various factors, including a fear of taking risks, such as concerns about securing initial capital, fear of bankruptcy and losses, uncertainty regarding which business to start and how to begin, a lack of skills in the startup ecosystem, and the high expectation of becoming a civil servant (PNS) after obtaining their degree. These reasons reflect a general lack of interest in entrepreneurship among students. Furthermore, this finding is supported by survey responses from 15 students from the 2016 and 2017 cohorts regarding their interest in entrepreneurship, which yielded the following data:

TABLE I. Observation of entrepreneurship interest.

Students years	Statements	Prosentase (%)
2016 & 2017	I am interested in entrepreneurship	33,3
	Entrepreneurship requires capital and involves risks	53,3
	I prefer to pursue a career in the public sector	86,7
	I lack the necessary skills or expertise, which diminishes my interest in engaging in entrepreneurship	60

To address this issue, efforts are required within higher education institutions to develop skills through more effective learning processes. One of the crucial and strategic courses in higher education for skill training is the practical course. The Department of Mechanical Engineering Education at State University of Makassar is one of the academic programs that equip students with the skills, knowledge, and work attitudes necessary to master the field of machining. One of the courses offered by the Department of Technical Education is the

Welding and Plate I Practice course. According to Achmad (2006: 54), welding is a process of joining metals where the metals become one due to the influence of heat, with or without thermal action, pressure, or as a metallurgical bond created by the attraction between atoms. The welding process is divided into two main types: fusion welding and solid-state welding. Fusion welding uses heat to melt the surfaces to be joined, with some operations using filler metal and others not. Solid-state welding is a joining process that uses heat and/or pressure but does not melt the base metal or add filler metal. Fusion welding includes processes such as arc welding, resistance welding, and gas welding. Through creativity in the field of welding, students can generate new ideas, remain open to innovative concepts, and achieve breakthroughs to create new ventures or products. This, in turn, can have an impact on students' interest in entrepreneurship.

Students must be able to use practical welding tools correctly and accurately, and manage welding equipment in accordance with its function and purpose. With adequate facilities in mechanical engineering education, students are expected to use welding tools practically, as they will either become educators or work in industry. If students are able to practice welding effectively and achieve good results, they will be motivated to continue improving and gain more confidence. Furthermore, they will not only be able to pursue careers as educators or in the industrial sector, but they can also venture into entrepreneurship. This is because becoming a business owner in the welding industry requires highly proficient welding skills.

Ardiwicaksana (2007) argues that the outcomes of welding practice learning influence interest in the welding profession. This implies that the success of welding practice education is one of the factors that motivate students to pursue entrepreneurship in the welding field. This is because individuals who demonstrate strong learning abilities in welding practice are more likely to achieve independence in the welding industry.

Based on the previous explanation, the researcher is interested in examining the Impact of welding and plate I practice learning outcomes on the entrepreneurial interest of students in the mechanical engineering education program, Makassar State University.

II. RESEARCH METHOD

The research method used in this study is the ex-post facto research method, which it refers to a study in which the independent variable occurs prior to the researcher's observation of the dependent variable (Darmadi, 2011: 223). In other words, an actual (post-factum) study is conducted on events that have already occurred. This type of research is also referred to as retrospective research, as it involves tracing back an event or occurrence and working backward to investigate the factors that led to the occurrence of the event (Arifin, 2012: 42).

The present study falls under the category of regression research as it aims to determine the strength or weakness of the influence between one variable and another. The variables in question are the learning outcomes in the Welding and Plate

1 Practice course and the entrepreneurial interest of students in the Department of Mechanical Engineering Education, Faculty of Engineering, State University of Makassar. The research method employed is quantitative, which involves measuring two variables—namely the independent and dependent variables—in numerical form. Subsequently, the study seeks to identify whether there is an influence between these two variables and what the potential outcomes may be.

The population of this study consists of students from the Department of Mechanical Engineering Education (S1) at the State University of Makassar (UNM) who have completed the Welding and Plate 1 Practice course, specifically the cohorts of 2019 and 2020. According to data from the Department of Mechanical Engineering Education at UNM, the total number of active students enrolled in the 2019-2020 cohorts is 46. Among them, 22 students were active in the 2019 academic year, and up to 24 students were active in the 2020 cohort.

The instrument used in this study is a questionnaire designed to measure the entrepreneurial interest of students in the Mechanical Engineering Education program at State University of Makassar. In this questionnaire, the researcher has provided several statements accompanied by response options, allowing respondents to select one of the available answers by marking a check (✓) next to the most appropriate choice based on their situation. The questionnaire employed in this study is a closed-ended questionnaire utilizing a Likert scale (Sugiyono, 2014: 93), which has been modified to include four response alternatives: Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). The following are the scores assigned to each response alternative for each statement.

III. RESULT AND DISCUSSION

The entrepreneurial interest discussed in this study refers to the students' interest and willingness to work or their desire to focus on meeting their life needs without fear of the risks they may encounter while pursuing their education. This interest is also related to the skills or abilities possessed by the students, complemented by education as initial capital for entering the workforce. One of the skills possessed by mechanical engineering students, which is included in the curriculum, is a practical welding and sheet metal course. This study aims to measure the level of entrepreneurial interest among the 2019 and 2020 cohorts of mechanical engineering students regarding their intention to start a business after graduation and obtaining a Bachelor's degree in Mechanical Engineering from State University of Makassar.

The present study encompasses two variables, with the independent variable being learning outcomes and welding practice, represented by Plate 1 (X), and the dependent variable being the interest in starting a business (Y). To describe and analyze the impact of the independent and dependent variables in this study, this section will present a description of the data for each variable based on the data obtained in the field.

The data for the learning outcomes variable of the Welding and Plate 1 Practice course, as obtained from the students' academic transcripts, were analyzed. Based on the processed

data of the learning outcomes for Welding Practice and Plate 1, the frequency distribution of this variable can be seen in Table 2.

TABLE 2. The Frequency distribution of variables in welding and plate 1 practice learning outcomes

No	Interval	Cumulative Frequency	Percentage
1	0,00 - 0,57	12	27,28%
2	0,58 - 1,15	0	0%
3	1,16 - 1,73	0	0%
4	1,74 - 2,31	5	11,37%
5	2,32 - 2,89	1	2,27%
6	2,90 - 3,47	20	45,45%
7	3,48 - 4,00	6	13,63%
Total		44	100%

Based on the data from the tables, it shows that the majority of respondents' scores in Welding and Plate 1 Practice are within the class interval 2.90 - 3.47, with 20 respondents, representing 45.45%. The smallest frequency, with 0 respondents, is in the class intervals 0.58 - 1.15 and 1.16 - 1.73.

The data for the entrepreneurial interest variable was obtained from a questionnaire distributed to students. Based on the data for the entrepreneurial interest variable, it was then processed to generate a frequency distribution using Sturges' Rule formula (Sugiyono, 2015).

The frequency distribution of the entrepreneurial interest variable can be seen in the diagram in Figure 4.2 as follows:

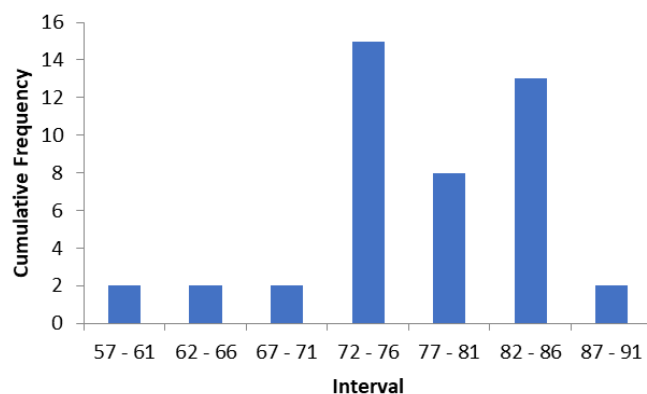


Fig. 1. the entrepreneurial interest variable diagram

Based on the Figure 1, it shows that the majority of respondents' entrepreneurial interest scores are in the interval class 72 - 76, with 15 respondents or 34.06%. The smallest frequency, with 2 respondents, is found in the interval classes 57 - 61, 62 - 66, 67 - 71, and 87 - 91.

The hypothesis test was conducted to draw conclusions from the obtained data, determining whether they align with the proposed hypothesis or not. In this study, the hypothesis test was performed using simple regression analysis and correlation testing.

The simple regression analysis is used to determine and measure the effect of an independent variable on a dependent variable. Simple regression is employed to examine the relationship between the independent variables, namely welding practical learning outcomes and Plate 1, and the

dependent variable, which is entrepreneurial interest. This analysis aims to assess the impact of welding and Plate 1 practical learning outcomes on entrepreneurial interest.

TABLE 3. The result of the simple regression test of X on Y.

Model		Coefficients ^a		t	Sig.	
		Unstandardized				Standardized
		B	Std. Error			Beta
1	(Constant)	70.992	1.734	40.934	.000	
	HASIL BELAJAR	2.701	.647	4.172	.000	

Dependent Variable: the entrepreneurial interest
Source: SPSS 25

Based on the table above, it can be observed that the p-value for patient satisfaction is 0.000, which is less than the probability value of 0.05. This indicates that the null hypothesis (H0) is rejected, and the alternative hypothesis (Ha) is accepted. Therefore, it can be concluded that the practical learning outcomes of welding and plate 1 (X) have a significant effect on entrepreneurial interest (Y).

Next, in the Coefficients Column B, the constant value (α) is found to be 70.992 and the value of the practical welding and plate learning outcome for 1 is 2.701, thus the regression equation can be written as:

$$Y = a + bX$$

$$Y = 70,992 + 2,701X$$

The coefficient b is referred to as the regression slope coefficient and represents the average change in the variable Y for each one-unit change in the variable X. This change reflects an increase in the value of b when it is positive, and a decrease when b is negative, allowing the equation to be interpreted accordingly.

1. The constant (a) of 70.992 indicates that if all independent variables, in this case entrepreneurial interest, are assumed to have a value of zero (no value), the learning outcomes of welding practice and the 1-inch plate would be 70.992, which falls within the category of having an effect. This suggests that the presence of the influence of the aforementioned variable will increase entrepreneurial interest. Therefore, variable X must be taken into consideration to enhance students' entrepreneurial interest.
2. The regression coefficient b is referred to as the slope coefficient, which represents the average change in the dependent variable Y for each one-unit change in the independent variable X. This change is positive when the coefficient b is positive and negative when b is negative. The regression coefficient value of X is 2.701, meaning that for every one-unit increase in employee service, patient satisfaction will increase by 2.701 units.

The correlation test is used to indicate the strength of the relationship between the independent variable and the dependent variable. The results of the correlation test between welding results and Plate I practice learning outcomes against students' entrepreneurial interest are presented in Table 4.

Based on Table 4, a correlation value of $R = 0.541$ was found, with a significance level of 0.000 and an R-squared value of 0.293. This indicates that the R value of 0.541, or 54.1%, suggests that entrepreneurial interest is influenced by

the practical learning outcomes of welding and Plate 1. Therefore, it can be concluded that the influence of the practical learning outcomes of welding and Plate 1 on entrepreneurial interest shows a moderate relationship, as it falls within the correlation interval of >0.40 to <0.70 .

TABLE 4. The correlation test

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.541 ^a	.293	.276	6.2450

Predictors: (Constant): Learning outcomes
Source: SPSS 25

Based on the data results above and in accordance with the statistical significance testing requirements of simple regression, if the significance value obtained is smaller than the alpha level used, in this case 5% alpha level (0.05), it can be concluded that the obtained R value is significant. The analysis results show that the R value of 0.541 is significant at the 5% alpha level, with a significance value (Sig.) of $0.000 < 0.05$. Therefore, it can be concluded that H0 is rejected and Ha is accepted, meaning that there is a positive effect of the variable (Y).

Based on the data analysis in this study, it shows that the variable of welding practice learning outcomes and Plate 1 (X) has a positive influence on the entrepreneurial interest variable (Y). The data analysis using SPSS 25 revealed the hypothesis test results with simple linear regression analysis, yielding the equation $Y = 70.992 + 2.701X$. This indicates that as the value of the variable (X) increases, the value of (Y) will also rise in accordance with the change in the variable (X). If the value of variable (X) increases by 1 point, the value of variable (Y) will increase by 2.701. Therefore, it can be concluded that entrepreneurial interest is influenced by the welding and Plate 1 practice learning outcomes.

Additionally, the results of this study also support the research hypothesis. This is evidenced by the correlation test results, which yielded an R value of 0.541 and a significance value of 0.000, which is less than 0.05, indicating that the variable of Practical Welding Learning Outcomes and Plate 1 has a positive effect on the Entrepreneurial Interest of students in the Mechanical Engineering Education program at the Faculty of Engineering, Universitas Negeri Makassar. Therefore, the second hypothesis of this study is accepted.

The findings of this study align with several previous studies that indicate the impact of welding practice learning outcomes and Plate 1 on entrepreneurial interest. According to Amri (2018), the results of his research, using descriptive statistical analysis and inferential statistical analysis, show that welding practice learning achievement has an impact of 77.8% on students' entrepreneurial interest. Furthermore, Mulyadi M & Soemowidagdo (2015), based on their research, found that learning outcomes or welding practice achievement positively and significantly influenced entrepreneurial interest, with a correlation coefficient ($ryx2 = 0.264$). Additionally, the study by Ardiwicaksana (2007) indicated that, partially, welding learning outcomes positively influence students'

entrepreneurial interest. This finding is further supported by Febriyanto D (2015), who stated that academic achievement, particularly in welding, has a positive and significant impact on entrepreneurial interest.

Based on several research findings and calculations conducted by the researcher, it can be concluded that the present study aligns with previous studies, where the researcher found that welding practice learning outcomes and Plate 1 have a positive and significant effect on entrepreneurial interest. Moreover, it is evident that these two variables are closely related.

IV. CONCLUSION

Based on the research findings and discussion presented, it can be concluded that there is a positive influence of the Welding and Plate 1 Practice Learning Outcomes on the Entrepreneurial Interest of Mechanical Engineering Education students at the Faculty of Engineering, State University of Makassar.

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