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The Influence of Practicum Facilities and Infrastructure on Student Learning Interest in Mechanical Engineering Education Corrosion Course

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A B S T R A C T

This study aims to determine the influence of practicum facilities and infrastructure on student learning interest in the Corrosion course in the Mechanical Engineering Education Study Program. The method used is a quantitative method with a correlational approach. The sampling technique uses *purposive sampling*, with a total of 50 respondents from the class of 2022. The results of data analysis using *the Pearson Product Moment* correlation test showed a significance value (*Sig. 2-tailed*) of 0.001, which is smaller than the significance level of 0.05. Thus, an alternative hypothesis is accepted. These results show that there is a significant influence between practicum facilities and infrastructure on student learning interest in the Corrosion course in the Mechanical Engineering Education Study Program. The results of this study show that the availability and quality of practicum infrastructure facilities contribute positively to increasing student learning interest, so the institution needs to pay attention to the management and development of practicum facilities so that the learning process is more optimal.

Keywords: *Facilities and Infrastructure of Parktikum, Student Learning Interest, Mechanical Engineering Education*.

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INTRODUCTION

Practical learning must also be based on the process of delivering material so that the activities are interrelated and run well. But that doesn't mean that the practicum process is not carried out, study program coordinators always try to figure out how to make students not only understand the material but must also be given an understanding in a practicum way (Andika,2022). In the practicum process, there are also several obstacles in the implementation process and other factors also have an effect, including the input provided by students to the university.

Students are the most important seed in the progress of the nation, with quality students they will be able to provide progress in the development of the nation for the better. Students are the next generation of the nation so that the benchmark of the nation's progress especially lies in the education obtained, the quality of good education greatly supports the development of good progress. The quality control management system for higher education services is divided into two, namely internal and external. The internal scope includes supervision of the implementation of higher education by universities in order to realize the vision and mission and to meet the needs of customer stakeholders (Sureza et al., 2021).

To find out the quality of education, it should be measured by measuring its service. This means that the quality of education is determined by the customer, not the status seller. The quality of a university is not measured by the size of the area, the grandeur of the university building. The quality of higher education is more determined by the quality of the services provided, one of the identification processes can be done through customer measurement, in this case the students (students).

According to (Muhibbin Shah 2020), it is stated that interest is a high tendency and enthusiasm or a great desire for something. Meanwhile, according to Slameto, interest is a sense of preference or interest in something or activity without anyone telling it. The explanation of the experts above, it can be concluded that interest in learning is curiosity followed by a sense of desire and interest in learning activities with a sense of pleasure without coercion from any party. This interest in learning can be seen from curiosity, student behavior while participating in lessons, students' liking for the student, and students' activeness in the learning process. If it is associated with Financial Accounting, then the interest in learning is the love and interest in the subject of Financial Accounting that encourages students.

Practicum in learning at high temperatures, most metals and polymers can react with oxygen or other gases. Materials that are subjected to corrosion attacks will fail faster. Mechanical engineers must be able to select materials or coating processes that can prevent corrosion reactions and allow a material to work at extreme temperatures (Ritonga, A. M. 2020).

Corrosion is a process of surface deterioration of metals and related materials. The change is caused by the metal (M) losing electrons and turning positive. M0 = Mm+ + me − Corrosion will stop if the electrical connection is disconnected, the cathode reactant is depleted and the anode reaction product (Mm+ + me-) is saturated. The temperature and concentration of chemical solutions play an important role in the corrosion process. The higher the temperature and concentration of the solution, the higher the corrosion rate. The electrical potential depends on the concentration of the electrolyte. At a temperature of 25oC, the electrical potential can be calculated with the Nernst equation (Sunardi, 2020).

Corrosion is a quality degradation event that occurs in a metal caused by a chemical reaction with the surrounding environment. The losses caused by corrosion are very large, such as if a building whose construction is made of steel is damaged due to a corrosion event, you can imagine the losses incurred if the building collapses or collapses. Losses are not only material, but human lives can also be lost. Factors that affect corrosion in metals include the increase in temperature will accelerate the corrosion rate, the higher the temperature, the faster the kinetic energy of the reacting particles increases so that it exceeds the activation energy (Putra, A,Y,W. et al., 2022). The speed of stirring also affects the contact between the reagent and the metal will be greater so that more metal ions will be released so that the metal will experience brittleness. The concentration of corrosive materials is related to the acidity or alkaline of a metal solution that is in an acidic environment that will corrode quickly while the alkaline solution will also be exposed to corrosion.

According to (Miranda, 2020) one of the factors that affect corrosion in the water environment is the presence of electrolytes. Examples are sulfuric acid and sodium chloride, both of which are powerful electrolytes. A strong electrolyte solution is a compound that is perfectly ionized when dissolved in water. Strong electrolyte solutions come from three types of solutions namely, water-soluble salts, strong acids and strong bases. While a weak electrolyte solution is a partially ionized solution in water. Weak electrolyte solutions come from two types of solutions, namely, weak acids and weak bases.

Interest in learning is one of the important factors that affect the success of the learning process. Students who have a high interest in learning tend to be more active, diligent, and have strong motivation in attending lectures, both in theory and practice. In the context of engineering education, especially in the Mechanical Engineering Education Study Program, practicum plays a crucial role in connecting theory with real applications in the field. The Corrosion course, which emphasizes the understanding and handling of material damage caused by the environment, requires the support of adequate practicum facilities and infrastructure so that students can develop technical competencies optimally.

The availability and completeness of practicum infrastructure, such as corrosion test equipment, experimental materials, and representative laboratories, can increase students' interest in learning. Research by Sepriadi et al. (2022) shows that the completeness of practicum equipment contributes positively to student learning motivation in the Painting

Technology course. Similarly, research by Zahranisya and Kurniawan (2025) found that interest in learning has a significant effect on learning outcomes in bench work practice courses. However, there are still limitations in research that specifically examines the influence of practicum facilities and infrastructure on students' learning interest in Corrosion courses.

Based on the researcher's experience during practice, there are several obstacles that affect the quality of learning, namely the lack of availability of adequate practicum facilities and infrastructure and the low interest in student learning in corrosion courses. In addition, limited practicum teaching materials are also one of the factors that worsen this condition. Therefore, researchers feel it is important to investigate whether the lack of availability of practicum facilities and infrastructure can affect students' interest in learning in corrosion courses.

Based on the questionnaire or questionnaire that has been distributed, as many as 50% of students stated that the lack of availability of adequate practicum facilities and infrastructure is an obstacle. In addition, 40.9% of students strongly agree that their low interest in learning is due to the limited facilities and infrastructure of the existing practicum.

According to the standards of laboratory facilities and infrastructure, corrosion includes several important aspects to support effective education. According to (Imas Ratna Ermawati, et al.,2024) There are some of the main elements that equipment is usually needed in corrosion laboratory testing, namely, Corrosion cells (to perform corrosion testing in electrolyte solutions), Corrosion testing cameras (to examine the effects of the environment on corrosion), Corrosion potential meters (to measure the corrosion potential of materials), Spectrometers (for analysis of the composition of corrugated materials), Humidity and temperature test opportunities (to simulate conditions different environments. In addition, the general equipment is Microscope (for the analysis of the microstructure of the surface of the material), Centrifuge (for the separation of particles in the solution), Furnace (for the heating process or heat treatment of the material), The reaction vessel (for the simulation of the corrosion process under various conditions), Chemicals and electrolyte solution reagents (Various types for corrosion testing), Cleaning agents and washing solutions (for cleaning samples), Chemical reagents (for corrosion analysis and testing), The supporting facilities contain storage rooms (to store chemicals and equipment safely), health and safety rooms (to ensure user safety), ventilation systems (to emit hazardous vapors or gases), human resources. Meanwhile, the one in the corrosion lab is currently only available with 3 tools and other support facilities are not available.

All of these things, they prefer to be silent and try to find their own way out such as sharing with friends or lecturers and even with their parents who are considered to be able to understand the student's situation at that time. Students as part of higher education should also hope to be able to enjoy the services of teachers well so that they will be able to have an effect in supporting the improvement of science and technology. The expectation of students as customers of a university is to be able to have their own workshop with facilities that are in accordance with the input that has been given to the university, this is one part of the assessment of customer satisfaction in terms of use.

Based on the description above, the author is interested in researching "The Influence of Practicum Facilities and Infrastructure on Student Learning Interest in the Corrosion Course of the Mechanical Engineering Education Study Program".

METHOD

This type of research is quantitative research with a correlational quantitative approach. Because in this study, the researcher will look for a correlation/relationship between two variables, namely practicum facilities and infrastructure to students' learning interest in the corrosion course of the mechanical engineering education study program. Correlation research is research that is intended to find out whether there is a relationship between two or several variables. (Sihombing, 2022) states a correlational design in which

investigators use correlational statistics to describe and measure the degree or association (relationship) between two or more variables or series of scores.

This research is located at the University of Sriwijaya Mechanical Engineering Education Study Program for the 2024/2025 academic year. The population in this study is the facilities and infrastructure of practicum for student learning interests in the corrosion course of the Mechanical Engineering Education Study Program. The sampling technique used in this study is *Purposive Sampling*. *Purposive Sampling* is a sample extraction technique used for a specific purpose or a specific consideration sample determination technique only. Based on the definition of sampling techniques above, in the research, the researcher provides an opportunity for students of the mechanical engineering education study program to be able to become a sample in this study with the considerations and conditions that the researcher determines in conducting this research. In this study, the researcher took a sample, namely 50 students of the class of 2022.

The prerequisite test of the instrument includes validity and reliability. The research instrument used in this study is an instrument that measures bound variables or influenced variables, namely students' learning interests. The SPSS output results on the validity test showed that of the 30 statement items that were prepared to measure the variables of student learning interest, there were 27 items that were declared valid and 3 items that were invalid. This is indicated by the calculated value of each item that is greater than the rtable value, which is 0.279. Thus, the 27 valid statement items can be used as instruments in this study to measure student learning interest in the Corrosion course. After the validity test is carried out, the valid question items are then tested for reliability. Based on the data above, it can be described that the data obtained from Cronbach's Alpha value of 0.874 which shows that the value of r_{11} obtained is greater than *the Cronbach's Alpha coefficient* of 0.279 and is declared reliable.

The data collection technique in this study is a questionnaire/questioner. In this study, the topic of the question is the confidence and intention of students to ask questions in lectures. To make it easier for researchers to collect research data, a google form application is used. The google forms application is an application provided by google that functions to provide services to create a quiz, question, survey form and others. The questionnaire used by the researcher in this study was a Likert scale model questioner, with the form of positive questions and statements (*favorable*) with scores of 4, 3, 2 and 1, with a multiple-choice answer model. In the jawan questioner's choice, score 4 is the answer choice (strongly agree), the score of 3 the answer choice (agree), the score of 2 the answer choice (disagree), the score of 1 the answer choice (strongly disagree).

To measure the strength of the relationship between predictor variable X and response Y, a product moment correlation analysis was performed, the result of which is expressed by a number known as the correlation coefficient. In carrying out this calculation operation, the researcher used *the IBM SPSS Statistics 27 for Windows* application.

FINDINGS AND DISCUSSION

Before the researcher conducts the research, the researcher first conducts the instrument prerequisite test and the data analysis prerequisite test before the research. The prerequisite test of the instrument includes validity and reliability. The research instrument used in this study is an instrument that measures bound variables or influenced variables, namely students' learning interests. In this study, the researcher took a sample, namely 50 students of the class of 2022.

Table 1. Validity Test

Statement Items	Calculation	rtabel	conclusion
P1	0.447	0.279	Valid
P2	0.256	0.279	Invalid
P3	0.357	0.279	Valid
P4	0.505	0.279	Valid

P5	0.587	0.279	Valid
P6	0.355	0.279	Valid
P7	0.316	0.279	Valid
P8	0.565	0.279	Valid
P9	0.255	0.279	Invalid
P10	0.388	0.279	Valid
P11	0.309	0.279	Valid
P12	0.460	0.279	Valid
P13	0.471	0.279	Valid
P14	0.268	0.279	Invalid
P15	0.522	0.279	Valid
P16	0.577	0.279	Valid
P17	0.534	0.279	Valid
P18	0.512	0.279	Valid
P19	0.378	0.279	Valid
P20	0.623	0.279	Valid
P21	0.466	0.279	Valid
P22	0.641	0.279	Valid
P23	0.598	0.279	Valid
P24	0.473	0.279	Valid
P25	0.583	0.279	Valid
P26	0.529	0.279	Valid
P27	0.643	0.279	Valid
P28	0.407	0.279	Valid
P29	0.472	0.279	Valid
P30	0.414	0.279	Valid

Source: Researcher, 2025

Based on the table above, it can be concluded that the SPSS output results in the validity test show that of the 30 statement items that were prepared to measure the variables of student learning interest, there were 27 items that were declared valid and 3 items that were invalid. This is indicated by the calculated value of each item that is greater than the rtable value, which is 0.279. Thus, the 27 valid statement items can be used as instruments in this study to measure student learning interest in the Corrosion course.

After the validity test is carried out, the valid question items are then tested for reliability. To test the reliability test calculation questions using *the Alpha Cronbach technique* and the results of the calculation of the test of the student learning interest questionnaire instrument can be seen in the following table:

Reliability Statistics

Cronbach's Alpha	N of Items
.874	27

Figure 1. Reliability Test

The results of the reliability test of the variables of student learning interest can be seen in the SPSS output results above. Based on the data above, it can be described that the data

obtained from Cronbach's Alpha value of 0.874 which shows that the value of r_{11} obtained is greater than *the Cronbach's Alpha coefficient* of 0.279.

So based on the results of the SPSS output calculation, it can be concluded that the measurement tool used by the researcher in the correlation of learning interest correlation to corrosion courses is reliable. Based on the validity test and reliability test above, there are 27 questionnaires that are declared feasible and used to collect data on student learning interests in the corrosion course of the mechanical engineering education study program as a sample in this study.

Next, a hypothesis test was carried out, namely *the product moment* correlation test, *which in this study was used to determine the correlation between independent variables and non-independent variables*. The product moment *correlation* can be determined whether or not there is a correlation between students' learning interests in corrosion courses. The correlation evidence referred to in this study is:

Correlations

		MINAT BELAJAR	MATA KULIAH
MINAT BELAJAR	Pearson Correlation	1	.561**
	Sig. (1-tailed)		<.001
	N	30	30
MATA KULIAH	Pearson Correlation	.561**	1
	Sig. (1-tailed)	<.001	
	N	30	50

**. Correlation is significant at the 0.01 level (1-tailed).

Figure 4.2 *Product Moment Correlation*

Hypotheses in the form of Sentences:

H_0: (there is no meaningful correlation between students' learning interest in corrosion courses).

H_1: (there is a significant correlation between students' learning interest in corrosion courses).

Hypotheses in the form of Statistics:

$H_0: m_1 = m_2$

$H_1: m_1 \neq m_2$

Testing Rules

The *value of sig (2-tailed)* is $0.001 < 0.05$, so there can be a correlation.

Results

Based on the results of the SPSS output above, it is known that *the sig (2-tailed) value* is $0.001 < 0.05$, so it can be concluded that there is a significant correlation between student learning interest in the corrosion course of the mechanical engineering education study program.

Based on the sig (2-tailed) value of 0.001 which is smaller than 0.05, it can be concluded that there is a significant correlation between student learning interest and the factors tested in this study. The very small significance value suggests that the relationship between the two variables is quite strong. The direction of the correlation shows a positive relationship, which means that the better the facilities and infrastructure available, the higher the students' interest in learning. In other words, improving the quality of learning facilities such as laboratories, classrooms, and internet access will have a positive effect on students' interest in learning, which in turn can increase their involvement in the teaching and learning process.

This research was conducted at Sriwijaya University as a population and the sample taken in this study was 50 students of the 2022 Mechanical Engineering Education Study Program. The implementation in this study was carried out by distributing questionnaires for one month, The purpose of the research that the researcher has conducted is to see if there is a correlation between students' learning interests and the corrosion courses of the mechanical engineering education study program. Before conducting the research, the researcher first

conducts a validity and reliability test of the questionnaire that will be submitted in this study. After the validity and reliability test is carried out, a qualified research instrument is obtained.

The instrument used in this study is an instrument that measures the bound variable or the variable that is influenced, namely the student's interest in learning. In this study, researchers sampled 50 students of the class of 2022.

In this study, to determine students' interest in learning corrosion courses within the mechanical engineering education study program, the researcher employed several indicators of student learning interest as tools to identify students with a high level of engagement. The indicators encompass aspects such as planning, procurement, inventory, and maintenance, along with more nuanced educational strategies. These include comparing the existence of a need to the student so that they are willing to learn without coercion, connecting lesson materials to students' real-life experiences to enhance comprehension, providing opportunities for positive learning outcomes through a creative and conducive environment, and utilizing diverse teaching methods and techniques tailored to individual student differences.

From the seven indicators mentioned above, the researcher compiled as many as 30 statement items. After going through the validity test process, there were 27 statement items that were declared valid and suitable for use in the research. These statements consist of positive and negative statements, which are measured using the Likert scale.

The hypothesis in this study is as follows:

H_0: (there is no significant correlation between students' learning interest in corrosion courses)

H_1: (there is a significant correlation between students' learning interest in corrosion courses)

Based on the results of the study, the results of the hypothesis test of the variables of learning interest and learning outcomes there is a relationship between the two. This can be seen based on the results of the SPSS calculation obtained with *a sig (2-tailed) value* of 0.001 < 0.05, then it can be concluded that there is a significant correlation between learning interest in the corrosion course of the mechanical engineering education study program.

These results show that the higher the student's interest in learning, the better the learning outcomes in the course. Conversely, low interest in learning can have an impact on declining student academic achievement (Sudiksa et al., 2020). These findings are in line with educational theories that state that interest in learning is one of the important factors that affect student learning success.

In addition, these results also provide an idea that aspects such as learning planning, environmental support, and learning strategies have a significant role in shaping students' learning interests (Sihombing et al., 2024). Therefore, lecturers and educational institutions are expected to create a conducive, interactive, and learning environment that is interesting and relevant so that students' interest in learning can continue to be increased.

This research contributes to efforts to improve the quality of learning in the university environment, especially in the Mechanical Engineering Education Study Program. By knowing the importance of the role of learning interests, the faculty and lecturers can develop a learning strategy that is more adaptive, innovative, and oriented to the needs and characteristics of students (Arafah, 2020).

Based on the results of research that has been conducted on 50 students of the 2022 batch of the Mechanical Engineering Education Study Program, Sriwijaya University, it can be concluded that there is a significant relationship between students' learning interests and learning outcomes in the Corrosion course. This is proven through a hypothesis test using SPSS which shows a value *(Sig. 2-tailed)* of 0.001 < 0.05, so that an alternative hypothesis is accepted. Student learning interest is measured through seven indicators, namely planning, procurement of learning resources, inventory of materials, maintenance, comparing the existence of a need in students, so that they are willing without coercion, Connecting the lesson materials provided with the problems of experience that students have, so that students can easily receive lessons, Providing opportunities for students to get good learning results by providing an environment Creative and conducive learning, Using various forms and teaching

techniques in the context of individual differences of students. The higher the student's interest in learning, the higher the learning outcomes in the Corrosion course, as well as the learning environment to create a learning atmosphere that supports the growth of students' interest in learning to the maximum.

CONCLUSIONS

Based on the results of the study, there was a significant relationship between facilities and infrastructure and student learning interest in the Corrosion course in the Mechanical Engineering Education Study Program, Sriwijaya University, with a significance value of 0.001 which was smaller than 0.05. The more complete and adequate the learning facilities, such as laboratories, classrooms, learning media, and internet access, the higher the students' interest in learning, which has an impact on improving material understanding and learning outcomes. Therefore, it is important for institutions to improve the quality and completeness of facilities, as well as maintain the condition of facilities and infrastructure so that the learning process is more effective and students' interest in learning can continue to be increased.

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