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The Contribution of Workshop Management to Students' Learning Outcomes in Vocational High School

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Abstract

SMK Negeri 1 Sumatera Barat has workshop facilities that support education, but learning outcomes in using machines for machine work practice are still below the minimum passing grade. The problem lies in the poor management of the machining workshop, such as many appliances that do not function properly, causing students to be hindered in carrying out practical work in the workshop, and equipment shortages with differences in the number of students. This research aims to reveal how workshop management can improve students' learning outcomes. The research used a quantitative descriptive research design. The study population was all 61 students registered in the XI grade of the Mechanical Engineering Program at SMK N 1 Sumatera Barat in the academic year 2022/2023, with a sample size of 38 students. The variables in this study were workshop management (X) and learning outcomes (Y). Data analysis techniques included descriptive analysis, hypothesis testing, and prerequisite testing. The prerequisite analysis tests were normality and linearity, while hypothesis testing used regression analysis. The results showed that the calculated correlation coefficient (r) was 0.781, with a positive or direct attribute with a significance value of 0.000. This means that the correlation between the two variables is significant at both 0.05 levels. Therefore, the null hypothesis (H0) was rejected, and the alternative hypothesis (H1) was accepted. Although the correlation and contribution levels between workshop management and students' learning outcomes were extreme, they were still below the minimum passing grade.

Keywords: Workshop Management, Learning Outcomes, Vocational High School, Mechanical Engineering

Introduction

The difficulty faced by the education sector today is the decline in the quality of education. To address this issue, the government has developed education improvement programs, including providing scholarships, refining the curriculum, improving exam assessments, and others. These initiatives reflect the government's concern about Indonesia's declining education standards. The most crucial factor is that education is the key to cultivating quality and high-quality human resources (Amri et al., 2020; Fahmi et al., 2021; Tanuwijaya & Tambunan, 2021). A person's education is crucial for developing their abilities and talents (Meria, 2018). It is assumed that education will help students reach their full potential and enable them to solve the problems they face. (Melianti et al., 2023). In essence, deliberate efforts are made to cultivate the learning process and learning environment that can develop students' potential (Aziz & Munif Shaleh, 2019).

A school is an educational environment where the teaching and learning process takes place. In Indonesia, the type of secondary education known as Vocational High School (VHS) has the same standing as Senior High Schools. VHS offers specialized majors in which the subjects are thoroughly prepared so that graduates are ready to enter the workforce as specialists. (Khoerun et al., 2022; Le et al., 2022). In Indonesia, VHS are critical educational institutions

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that contribute to the growth of the nation and the country (Hakim, 2019). Student learning outcomes are a good indicator of educational effectiveness.

After completing a learning experience, a person should have acquired specific competencies. Following the completion of education, there should be a behaviour change, and what is achieved is called learning outcomes. (Fortuna et al., 2022). The learning outcome is obtained by students from the teaching and learning process, and what is reflected in the report is often referred to as learning outcomes. Learning outcomes include the adjustment of students' abilities and characters that result from their learning. (Hakim, 2019). Internal variables may consist of factors such as cognitive abilities, learning style, and motivation, while external variables may include elements such as home environment, social support, and availability of resources. Identifying and addressing internal and external factors affecting learning is essential to help students overcome difficulties and achieve their full potential. (Prasetya et al., 2021). School facilities and infrastructure are an example of external influences on students' learning difficulties. Inadequate facilities, such as insufficient buildings, lack of laboratory and library facilities, and others, can affect students' motivation and interest in learning and the quality of education received by students. This can have an impact on students' learning difficulties and a decrease in their learning outcomes.

School facilities are examples of intermediaries that convey ideas so recipients can understand them (Gabriela, 2021). Workshop, as it can develop students' skills, is a location and infrastructure that VHS must have to assist the practical learning process. To ensure that the teaching and learning process is always useful, facilities and infrastructure management must be carried out sustainably and frequently planned for such purposes. (Gabriela, 2021). Facilities in schools, such as workshops, are a unique aspect of vocational high schools (Krisnandi et al., 2021). The organization of workshops is essential in delivering education in vocational high schools and can produce graduates with various skills (Priambudi et al., 2020). By consistently correctly organizing workshops, the management of seminars aims to ensure a smoother teaching and learning process (Yulius, 2020). Poor workshop management can result in low student learning outcomes in practical topics that require machinery.

Based on the observations and interviews conducted by the author at SMK N 1 Sumatera Barat, the learning outcomes of machines used for practical work are still below the Minimum Passing Grade (MPG). The issues include poorly managed machining workshops, where many devices are not functioning correctly, making it difficult for students to complete their practical work. There is also a shortage of tools due to differences in student registration, where some students purchase functional materials outside of school during class hours. In addition, students lack understanding of how to use the equipment, which is evident from their unsatisfactory learning outcomes, the tendency to wait for their turn during practice, and confusion when carrying out the practical work. These are still problems that have not been adequately addressed.

Methods

Types of Research

This research is a quantitative descriptive study, where the method describes two or more variables without adding, changing, or manipulating them (Jaya, 2020).

Population and Sample

The population consists of all information that affects us during a specific period. The research population is all 61 class XI Mechanical Engineering students at SMK N 1 Sumatera Barat in the academic year 2022-2023, as seen in Table 1.

Table 1: The number of students in class XI Mechanical Engineering at SMK N 1 Sumatera Barat

No	Class	Number of Students
1	XI TP1	30
2	XI TP2	31
Total		**61**

The equation used to determine the number of study samples (n) from the entire population,

$$n = \frac{N}{N\ d^2 + 1} = = \frac{61}{61\ 0{,}1^2 + 1} = 37.88 = 38\ Sample$$

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Where:

n : Number of Samples
N : Population
d^2 : Set precision at 10%

Data Collection Techniques

Questionnaires are used in the method of collecting data in research. The purpose of the questionnaire is to collect data from the intended respondents to provide the information sought by the creator (Nurlan, 2019). This questionnaire is used in the data collection method submitted to respondents directly. Utilizing questionnaires will allow you to conduct research faster and with less effort.

Technical Data Analysis

Descriptive Data

The state of each variable is described by descriptive analysis, including the highest and lowest values, mode, mean, median, and standard deviation of the average curve histogram.

Analysis Requirements Testing

The Kolmogorov-Smirnov sample normality test is the normality test used in this investigation. The analysis aims to prove that the data set is abnormal or has a distribution that is close to normal. SPSS version 25.00 for Windows was used in this study. The linearity test is applied to determine whether the data is linearly patterned / not between the relationship between variable X and variable Y (Nashukha et al., 2014).

Hypothesis Testing

According to (Sugiyono, 2015) that hypotheses provide solutions to research problems as formulated.

Results and Discussion

Results

According to research findings, there are two independent variables, namely workshop management variables and student learning outcomes (X) and one bound variable (Y) obtained through questionnaires of 44 items filled in by 38 students of SMK Negeri 1 Sumatera Barat. There are five additional options, with the highest score being five and the lowest being one.

Table 2: Results of Descriptive Analysis on Variable X

Statistics		
Workshop Management		
N	Valid	38
	Missing	0
Mean	157.34	
Median	152.50	
Mode	144	
Std. Deviation	22.898	
Variance	524.339	
Range	80	
Minimum	116	
Maximum	196	
Percentiles	25	140.75
	50	152.50
	75	177.50

The highest score is 196 and the lowest score is 116 according to the workshop management. The result of the average price analysis (mean) is 157.34; (Me) median is 152.50; (Mo) mode is 144; and (SD) the standard deviation is 22.898. The complete data can be seen in Table 2. The

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average score listed on the student's report card represents the results the student achieved in the Subject Using Machines for Work Practice. Teachers of related subjects are a good source of information about the learning outcomes of learners. The top score is 92 and the bottom score is 40 based on the learning outcomes of the learners. Overall price analysis (M) yields the following results: 61.39; median (Me) 60.00; mode (Mo) 42; and 15.256 for standard deviation (SD). The data from the descriptive analysis of variable Y is shown in the table below.

Table 3: Results of Descriptive Analysis on Variable Y

Statistics		
Learning Outcomes		
N	Valid	38
	Missing	0
Mean	61.39	
Median	60.00	
Mode	42[a]	
Std. Deviation	15.256	
Variance	232.732	
Range	52	
Minimum	40	
Maximum	92	
Percentiles	25	48.00
	50	60.00
	75	77.00

a. Multiple modes exist. The smallest value is shown

Normality Test

The SPSS computer program version 26.00 and the Kolmogorov-Smirnov analysis method used in the normality test of this study assumed behind the decision-making process is that the distribution is considered normal if Asymp.Sig (2-tailed) > 0.05. The normality test results are shown in Table 4.

Table 4: Normality Test Results

Kolmogorov-Smirnov	Significance Value
Variabel X terhadap Y	0,09

Weighing the test results The normality test results of Table 4 show that it was obtained at 0.09; the result is then considered normal as long as the Asymp.Sig (2-tailed) value > 0.05.

Linearity Test

Linearity testing serves to reveal whether or not there is a relationship between independent and bound variables. The SPSS version 2 program was used to assist in the linearity test in this study. If the deviation of the linea entity value is greater than 0.05, the data is considered linear according to the test criteria shown in the test results below.

Table 5: Linearity Test Results

Variable	Sig. deviation from linearity	Signification level
Workshop management of learning outcomes	0,069	0,05

Based on Table 5 data, it can be said that the data is linearly patterned where based on the results of the linearity test using SPSS obtained a significance value (Sig. Deviation from linearity) of 0.069.

Hypothesis Testing

Testing is carried out to determine whether there is a relationship using hypothesis testing using the correlation analysis method using SPSS v. 25.00, this analysis uses a correlation method

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created by Pearson called the Product Moment correlation method. After the data has a linear pattern and is normally distributed, hypothesis testing is carried out. The findings of the analysis are as follows.

Table 6: Correlation Test Results

Variable	The significant value of the correlation	Significance level	Person Correlation	Information
Workshop Management of Learning Outcomes	0,000	0,05	0,989	Very high

Then, it can be calculated using the determination coefficient formula to see how large the correlation of learning interest variables on learning outcomes. They are as follows:

$$KP = r^2 \times 100\%$$
$$= 0{,}989^2 \times 100\%$$
$$= 97{,}81 \times 100\%$$

Based on the results of the coefficient of determination obtained, it can be concluded that H1 is approved and H0 is rejected because of the positive and significant relationship between X and Y variables. According to the analysis results, the calculated assessment is greater than the rtable (0.989 > 0.329) and has a big score of 0.000 relevant less than 0.05. Based on the analysis results, there was a correlation of 97.81% between workshop management and learning outcomes, influenced by 2.19%, with other factors not considered in the study.

Discussion

A linearity test is used to determine the presence or absence of a relationship between the independent and bound variables. If the deviation of the linearity value is more significant than 0.05, it is considered linear. The results of the linearity test are obtained at 0.069, and it can be known that the free and bound variables have a linear relationship. The product-moment correlation test will be used in the study to reveal whether the handling of the workshop contributes to student learning outcomes in operating machines in class XI SMK Negeri 1 Sumatera Barat.

According to the results of the product-moment correlation test in Table 6, it is concluded that the learning outcomes of workshop managers and students are positively and significantly correlated with a coefficient of determination of 97.81% and r count = 0.9781 and significance—value 0.000. The correlation of workshop management to learning outcomes was 97.81%, while 2.19% was influenced by other factors not studied in this study. This is also seen in a survey conducted by Arif Isda (2013). Research findings show the contribution of workshop management to student learning outcomes in subjects using machines for basic operations of class XI Mechanical Engineering SMK Negeri 1 Bukittingi. It can be explained that better workshop management is needed to improve student learning outcomes, so students are expected to practice without distractions that eliminate concentration in learning, especially for practical subjects.

Conclusion

Researchers concluded that workshop management contributed to the learning outcomes using machine work practices in class XI SMK Negeri 1 Sumatera Barat based on research findings focused on data analysis and discussion. In grade XI students, workshop management is highly correlated with machine learning outcomes for work practices. Based on the conclusions above, the correlation between the two variables is significant, with either a correlation coefficient (calculated) of 0.05 or 0.7.81 which is positive or unidirectional. This results in a significance value of 0.000. As a result, the alternative hypothesis (H1) was approved, and the null hypothesis (H0) was rejected. However, there is a robust correlation or contribution between workshop management and good learning outcomes.

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Declaration

Author's Contribution

Yang Yung Irawan acts as a researcher and data collection, Yufrizal acts as a supervisor who directs the way and process of making, Purwantono plays a role in evaluating the research data results, and Randi Purnama Putra plays a role in assessing research.

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Conflict interest

The authors declare no conflict of interest.

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