

## The Effect of Workshop Facilities on Practice Learning Outcomes of Students of SMKN 1 Tomohon

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**Abstract**— The goal of the study was to ascertain how workshop facilities affected students' learning results of electrical power installation engineering practice at SMK N 1 Tomohon. The research method used is a quantitative descriptive method with a simple regression technique. The research population was all Class XI students, Department of Electrical Power Installation Engineering, which amounted to 30 people. The research sample was the entire population, Class XI students of the Department of Electrical Power Installation Engineering, which amounted to 30 people. Workshop facilities are one of the external factors that can improve students' learning outcomes of electricity installation engineering practice at SMK N 1 Tomohon. The research question is whether the workshop facilities at SMK N 1 Tomohon have an impact on the learning outcomes of students' electrical power installation engineering practice. The research instrument used to measure workshop facilities was a questionnaire, while for student learning outcomes, it was through a learning evaluation. The study concludes that workshop facilities affect the results of learning of electricity installation engineering practices for students of SMK N 1 Tomohon. The study results evidence this obtained a significance value of  $0.000 < 0.05$ , and the t-count value is more significant than t-table, namely t-count = 11.191 > t-table 2.048. With the magnitude of the influence of 81.7%.

**Keyword:** workshop facilities, learning outcomes

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### I. INTRODUCTION

A secondary level institution that attempts to equip students with the knowledge, skills, and abilities needed to succeed in the workplace, industry, and business sector is the vocational high school. Vocational High Schools have a significant role in preparing workers who can work productively and have skills in using and utilizing Electrical Power Installation Engineering tools. This can be obtained through teaching and learning activities (Bowman, 2004).

Workshop facilities are one of the external factors that support improving students' practical learning achievement. Therefore, the workshop equipment must be adequate and well managed to always be ready. Many things can cause a decrease in the condition of work facilities, and generally due to the age of old work tools. Besides that, it can also be caused by the use of work facilities without paying attention to the condition of the equipment so that the existing work facilities are not precise, even damaged and cannot function the same. Therefore, regular maintenance of work facilities is an important thing

to do to maintain the condition of work facilities so that students can work effectively and efficiently, which can become and improve learning outcomes (Bungau et al., 2021).

Based on the results of observations and brief interviews with teachers of electrical power installation engineering subjects and several students at SMK N 1 Tomohon, the researchers observed and found that there was still a lack of workshop facilities in schools. Limited facilities and equipment for electrical power installation engineering workshops in schools. The lack of teachers in the field of electric power installation engineering studies, and it was found that some workshop equipment had started to break down and could not be used. Some students did not carry out and utilize workshop facilities to practice electrical power installation techniques.

Low student learning results for the class XI SMK N 1 Tomohon's engineering practice for installing electric power were another issue. This can be seen from the value of the learning evaluation results on the subject matter of electric power installation engineering practice with a KKM value of 75. Most of the students did not complete it. This can



be seen from the total number of students in class XI is 30 people. There are only 14 (46.67%) students who have completed with a KKM value  $> 75$  for welding engineering material, and the remaining 16 (53.33%) students are not complete or have a KKM value  $<$  of 75 on the subject matter of electrical power installation engineering.

Identification of problems encountered in research observations: (i) lack of utilization of workshop facilities; (ii) low learning outcomes of SMK N 1 Tomohon students practicing electrical power installation engineering; (iii) limited facilities and places for electrical power installation engineering workshop equipment; (iv) lack of teachers in the field of electrical power installation engineering studies; and (v) some of the workshop equipment has started to break down and cannot be used. Many students do not do and utilize the workshop facilities to practice electrical power installation techniques.

This study sought to ascertain how workshop facilities affected students at SMK N 1 Tomohon's learning results for electrical engineering practices. This research work will be more focused on achieving these goals.

In essence, teaching is a process carried out by teachers in developing student learning activities (Witherington, 2004). Teachers carry out the teaching and learning process in developing learning activities for students as optimally as possible towards changes in behaviour following the expected goals.

Learning outcomes are results that students acquire after engaging in learning and learning activities as well as documentation of success that include cognitive, emotional, and psychomotor components that are articulated in symbols, letters, and phrases (Sataruno et al., 2022). The leading indicators of student learning outcomes are (a) the achievement of absorption of the learning materials taught, both individually and in groups. The measurement of the achievement of this absorption is usually done by determining the Minimum Completeness Criteria (KKM); (b) the behaviour outlined in the learning objectives has been achieved by students both individually and in groups.

The learning outcomes achieved by students are influenced by two main factors, namely factors from within students and factors from outside students, especially their abilities. The student's ability factor significantly influences the success of student learning achievement. Besides the ability factor, other factors affecting student learning outcomes are learning motivation, perseverance, socio-economic, physical and psychological factors.

Both internal and external influences can have an impact on learning results. Physiological and psychological elements are examples of internal factors. At the same time, instrumental and environmental factors are considered external factors (Munadi, 2015).

A workshop is a place (building or room) for maintenance and repair. A workshop is a place for teaching and learning activities or student practicum. Besides that, the workshop is also a place of business to carry out business activities to support student operational activities so that additional equipment is needed.

Workshop standards applied in Vocational High Schools have been regulated in the national education minister's regulation on facilities and infrastructure standards. Based on the Regulation of the Minister of National Education of the Republic of Indonesia Number 40 of 2008 concerning Standards for facilities and infrastructure for SMK/MAK articles 1-5, a school, especially SMK, must have an adequate workshop or place of practice. This is so that students can practice directly the material obtained. A proper or adequate workshop for practice at least fulfils the following: (i) good workshop atmosphere (workshop condition), (ii) maintained workshop maintenance, (iii) sufficient practical equipment, (iv) suitable practice materials, sufficient (v) application of occupational safety and health (in Indonesian abbreviated as K3) for workshop personnel and students.; Occupational Safety and Health (K3) is an essential part of a job in a laboratory, company, or workshop (Hidayat & Wahyuni, 2016), and (vi) the application of 5S theory (seiri, seitan, seiso, seiketsu, shitsuke) in the workshop.

The 5S theory is a method of structuring and empowering work areas. The initiator of this method is Japan. 5S itself is an abbreviation of seiri (sorting), seitan (arrangement), seiso (cleaning), seiketsu (consolidation), and shitsuke (habituation). The 5S program in Indonesia is known as the 5R. Namely, Concise, Neat, Clean, Treat and Diligent ("Ringkas", "Rapi", "Resik", "Rawat" and "Rajin"). Both 5S and 5R aim to make the work area organized, and clean, reduce waste and change the attitude of the perpetrators of these methods.

Workshop facilities are an essential means of learning vocational practice. In selecting the required machinery and equipment, it is necessary to pay attention to (i) the available space; (ii) the availability of electricity, water and power; (iii) Arranged to meet practical needs and perform cleaning, repair, and maintenance; (iv) The quality is resistant to rough treatment in use and is impact resistant; (v)

Equipment has safety with those in the workplace and factory; and (vi) Special matters should be sought to get the approval of the experts (Sulistyo & Hargiyarto, 2019).

Facility design is an activity to produce a facility which consists of structuring its physical elements, regulating the flow of materials, and ensuring the safety of workers. The area of the room results from the regulation of various components involved in the company's or organization's internal business processes. Planning is divided into four, namely: (a) Supporting the organization's vision by improving the movement of goods, controlling goods and managing goods; (b) Effective utilization of workers, equipment, space, and energy and minimization of investment capital; (c) Easily adaptable and promote ease of maintenance; and (d) Protect workers to be safe and support job satisfaction. (Ridwan, 2009).

Workshop facilities Electrical installations contain elements of workshop equipment and supplies. Equipment and supplies are two items that have different functions. Equipment is goods or objects directly used in the business (production) to obtain specific results (Moenir, 2005).

The furniture for the practice room in the Electrical Engineering Basic Laboratory is a work desk, work chair and storage cupboard for styles and materials. The standard for work desks and chairs is one table per child and one chair per child. There is a minimum of one set of tools and materials storage cabinets available. Based on observations, there are 30 desk units for 30 students, and for 30 students, there are three storage cabinets for tools and materials.

The main tools of practice that were evaluated were 13 tools. The determination of this equipment is based on the use of the equipment when carrying out practice, and the source of the equipment being evaluated is classified into measuring instruments, power supplies and test pens. Measuring instruments in the form of ammeters, multimeters and voltmeters with different measuring limits, while the power supply is in the form of adapters with different outputs. From the results of observations and documentation obtained, data on the fulfilment of measuring instruments in the form of 10 ammeters, eight voltmeters and 17 multimeters. Power supplies in the form of adapters reach 12 units and only 3 test pens.

Electrical power installation engineering practice is a form of productive learning process activity that teaches electrical lighting installation engineering materials with expertise. Skills in planning, installing lighting and power installations,

installing and operating electric motors with Electromechanical, Electronics, PLC (programmable logic control) controls and others. This activity can take place if several main aspects, namely support it: aspects of workshop facilities, suitable materials, learning sequences or learning implementation plans, sheets, teachers, technicians, students and other supporting aspects.

Practical learning is the core of activities in practical workshops. Teachers and students are involved in an applied learning process that examines and adapts theoretical knowledge to real situations. The stages of the experimental learning process need to be considered, especially in the preparation of suitable materials, the implementation of practical activities according to the job sheet, and the evaluation of practical results. This is needed to realize the situation and conditions of suitable practice learning activities in practical workshops.

The framework (Figure 1) and model of the relationship between each research variable are following the scope of research on the influence of electrical installation workshop facilities in the practical learning process on learning outcomes for students at SMK N 1 Tomohon in the practical field of electrical power installation engineering. The results of learning the practice of electric power installation techniques are workshop facilities that include all the facilities contained in the practical workshop, tool room, material room, facility planning, and workshop management. More details about the research framework can be seen in Figure 1. Based on the theoretical basis and framework, the hypothesis in this study can be formulated as follows: there is an influence of workshop facilities on the learning outcomes of students' electrical power installation engineering practice at SMK Negeri 1 Tomohon.

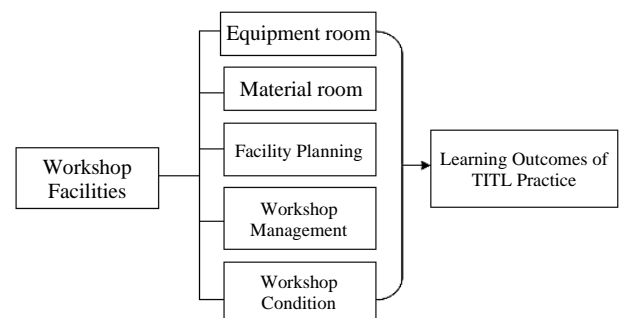


Figure 1. Framework of thinking in research

## II. METHOD

This study combined descriptive analysis with a quantitative method to determine how workshop

facilities affected students at SMK N 1 Tomohon's learning outcomes for electrical power installation engineering practice.

The population in this study were students of SMK N 1 Tomohon, totaling 30 people. The population is a generalization area consisting of objects or subjects with specific qualities and characteristics determined to be studied and then drawn conclusions (Sugiyono, 2014). Considering the limitations of the research period and the time set aside by prospective respondents to fill out the questionnaire, students from SMK N 1 Tomohon, totalling 30 partially respondents or representations of the demographic investigated, served as the study's sample (Arikunto, 1998).

The techniques used in carrying out this research are (i) questionnaires, namely data collection techniques carried out by giving a set of questions or written statements to respondents to answer. (ii) Documentation is usually done to collect secondary data from various sources. The documentation method in this study is used to find data about the value of student learning outcomes (Arikunto, 2019).

Table 1. Grid of Workshop Facilities Variable Instruments (X)

Variable	Indicator	Item
Workshop Facilities (X)	1. Equipment room	1,2,3,4,5
	2. Material room	6,7,8,9, 10,12
	3. Facility Planning	13,14,15
	4. Workshop Management	16,17
	5. Condition of Workshop Facilities	18,19,21,22,23
<b>Total</b>		<b>21</b>

The instrument used to measure workshop facilities is a Likert scale questionnaire. In this Likert scale, the score is adjusted according to the form of the question for each item. The alternative answer choices for each question are as follows: strongly agree (SS) = 4, agree (S) = 3, disagree (TS) = 2, and strongly disagree (STS) = 1. The instrument grid can be seen in Table 1.

The validity test is helpful to find out whether there are questions in the questionnaire that should be discarded because they are considered irrelevant. The method that will be used to test the validity is by correlating the score of the statement items with the total score of the construct or variable. The number of items for each variable in this study is as follows: for the workshop facility variable (X), there are 21 items, calculated using the SPSS version 22 program (Kadir, 2016). A validity test is used to determine the validity of the questionnaire in data collection. The validity test used the bivariate person correlation formula with the SPSS version 22 program tool. Questionnaire items in the validity test were said to be valid if the

value of  $r$  arithmetic  $>$   $r$  table was at a significance value of 5%. On the other hand, the item is said to be invalid if the value of  $r$  count  $<$   $r$  table at a significance value of 5%.

The reliability test helps determine whether the instrument, in this case, the questionnaire, can be used more than once, at least by the same respondent. The reliability test used in this study is to use the SPSS version 22 program (Riduwan, 2011). The reliability test was carried out using the Alpha formula with the help of the SPSS version 22 program tool. The significance test was carried out at the level of = .05. The instrument can be reliable if the alpha value is greater than the  $r$  table value.

To use a regression test to assess the research hypothesis and determine the impact of workshop facilities on students at SMK N 1 Tomohon's learning outcomes for electrical power installation engineering practices.

The normality test of the data can be carried out with the help of the SPSS version 22 program using the Kolmogorov-Smirnov test. The linearity test aims to determine whether two variables have a linear relationship or not significantly. This test is usually used for prerequisites in correlation analysis or linear regression. To detect a linear relationship between X and Y, a linearity test was carried out with the help of the SPSS version 22 program.

To determine whether workshop facilities impact the learning outcomes of electrical power installation engineering practice for students of SMK N 1 Tomohon, a simple regression test utilizing the SPSS version 22 program is used to test the research hypothesis (Kadir, 2016).

### III. RESULTS AND DISCUSSION

The results of testing research hypotheses using the SPSS Version 22 program show a significant influence between variable X (workshop facilities) and variable Y (learning results of electrical power installation engineering methods for SMK N 1 Tomohon students), which can be seen in Table 2.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.904 <sup>a</sup>	.817	.811	2.708

Based on Table 2, according to the summary model, the magnitude of the correlation/relationship (R) value is .904. The coefficient of determination (R square) calculated from the output is .817, implying that the independent variable (workshop facilities) has an 81.7% influence on the dependent variable

(students' learning outcomes of electrical power installation engineering practices at SMK Negeri 1 Tomohon).

**Table 3.** ANOVA of the variable workshop facilities on the variable of learning outcomes of SMK Negeri 1 Tomohon electric power installation engineering students

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	918,765	1	918.765	125,245	.000 <sup>b</sup>
Residual	205,401	28	7.336		
Total	1124,167	29			

**Table 4.** The coefficient of the workshop facility variable on the variable of learning outcomes of electric power installation engineering students of SMK Negeri 1 Tomohon.

Model	Unstd. Coefficients		Std. Coeff.	t	Sig
	B	Std. Error	Beta		
1 (Constant)	36.636	4.335		8.451	.000
Workshop facilities	.753	.067	.904	11.191	.000

Based on the ANOVA output in Table 3, the estimated F value is known to be 125,245 with a significance level of .000 < .05. The regression model may then be utilized to predict the variable of student learning outcomes of SMK Negeri 1 Tomohon's electrical power installation engineering practice. Alternatively, in other words, there is an influence of the workshop facility variable on the variable of learning outcomes of electric power installation engineering practice for students of SMK Negeri 1 Tomohon.

According to Table 4 of the Coefficients above, the value of Constant (a) is 36.636, and the value of workshop facilities (b) is the regression coefficient of .753, thus the regression equation may be expressed as follows:

$$Y = a + bX$$

$$Y = 36,636 + 0,753X$$

The constant in the equation is 36.636, which means that the consistent value of the variable learning outcomes of electrical power installation engineering practices for students at SMK Negeri 1 Tomohon is 36,636. According to the regression coefficient X (workshop facilities) of .753, for every 1% increase in the value of workshop facilities, the value of learning outcomes of electrical power installation engineering practice for students at SMK Negeri 1 Tomohon improves by .753. The regression coefficient is positive, indicating that the variable X

(workshop facilities) has a positive impact on the variable Y (the learning outcomes of electrical power installation engineering practices for students at SMK Negeri 1 Tomohon).

Based on the test results contained in Table 4. Coefficients obtained a significance value of .000 < .05, so it can be concluded that the workshop facility variable (X) affects the variable student learning outcomes of electric power installation engineering practice of SMK Negeri 1 Tomohon (Y). Based on the results of this study, it is proven that there is an influence of workshop facilities on the learning outcomes of electric power installation engineering practices for students of SMK Negeri 1 Tomohon.

Based on the results of the tests carried out descriptively, the results of this study revealed that the descriptive results of the workshop facility variable (X) contained a sample of (n) 30 respondents who filled out the questionnaire with an average (mean) of 64.00 with a standard deviation of 7.474. Furthermore, SMK Negeri 1 Tomohon students' learning outcomes for electrical power installation engineering practices, there are several samples (n) 30 respondents with an average (mean) of 84.83 with a standard deviation of 6.226.

Based on the normality test results with Kolmogorov-Smirnov, the significance value is known to be .000 < .05. So, it can be concluded that the variable data of workshop facilities (X) and the variable of student learning outcomes of electric power installation engineering practice of SMK Negeri 1 Tomohon (Y) are normally distributed. Meanwhile, the results of the linearity test of the workshop facilities variable (X) and the learning outcomes of the practical electrical power installation engineering students of SMK Negeri 1 Tomohon (Y) are known to have a sig. deviation from linearity is .175 > .05. So, it can be concluded that there is a linear relationship between workshop facilities and the learning outcomes of electrical power installation engineering practices for students of SMK Negeri 1 Tomohon.

The correlation/ relationship (R) value between workshop facilities and learning outcomes of electrical power installation engineering practices for SMK Negeri 1 Tomohon students is .904.

With a coefficient of determination (R square) of .817, it means that the effect of the workshop facility variable on the student learning outcomes of electrical power installation engineering practice at SMK Negeri 1 Tomohon is 81.7%, and other variables outside this research variable influence the remaining 18.3%. Based on the regression equation findings, the constant (a) value is 36,636 and the workshop facility value (b/regression coefficient) is .753, thus the regression equation may be stated as

follows:  $Y = a + bX = 36,636 + .753X$ . This indicates that the constant is 36,636, indicating that the consistent value of the variable student learning outcomes of SMK Negeri 1 Tomohon's electrical power installation engineering practice is 36,636. The regression coefficient  $X$  (workshop facilities) of .753 states that for every 1% rise in the value of workshop facilities, the value of electrical power installation engineering practice learning outcomes for students at SMK Negeri 1 Tomohon improves by .753. The regression coefficient is positive, indicating that the variable  $X$  (workshop facilities) has a positive impact on the variable  $Y$  (the learning outcomes of electrical power installation engineering practices for students at SMK Negeri 1 Tomohon).

Based on testing the research hypotheses, a significance value of  $.000 < .05$  was obtained, so it can be concluded that the workshop facility variable ( $X$ ) affects the students' learning outcomes of the electric power installation engineering practice variable.

SMK Negeri 1 Tomohon ( $Y$ ), based on the  $t$  value, the  $t$  count value is  $11.191 > t$  table 2.048. So, it can be concluded that the variable of workshop facilities ( $X$ ) affects the variable of student learning outcomes of electric power installation engineering practice of SMK Negeri 1 Tomohon ( $Y$ ). Based on the results of this study, it is proven that there is an influence of workshop facilities on the learning outcomes of electric power installation engineering practices for students of SMK Negeri 1 Tomohon.

The results of this study, in general, can be said that the availability of workshop facilities in the research location of SMK Negeri 1 Tomohon, such as the tool room, material room, facility planning, workshop management, and the condition of this workshop facility can contribute and influence the learning outcomes of power installation engineering practice for SMK Negeri 1 Tomohon students. The workshop facilities can make it easier for students to practice and develop their knowledge because students in vocational high schools must develop their skills, which are only obtained in vocational practice.

Vocational practice needs workshop facilities to be used by students to work and develop skills that follow the vocational teaching being taught. Without adequate workshop facilities, practical learning may not be able to achieve the expected instructional objectives.

Workshop facilities are an essential means of learning vocational practice (Hariyanto et al., 2021). In selecting the required machinery and equipment, it is necessary to pay attention to (i) the available space; (ii) the availability of electricity, water, and power; (iii) Arranged to meet practical needs and perform cleaning, repair, and maintenance; (iv) The quality is

resistant to rough treatment in use and is impact resistant; (v) Equipment has safety with those in the workplace and factory; and (vi) Special matters should be sought for approval by experts.

Based on this theory, the workshop facilities in Vocational High Schools are essential facilities that can support the vocational practice learning process (Setia & Nasrudin, 2020). Therefore, complete facilities are needed that are relevant to vocational practice learning to help the learning process activities to run optimally. The study's findings suggest that workshop facilities can improve student learning outcomes in SMK Negeri 1 Tomohon's electrical power installation engineering practice. This is because the condition of the workshop facilities in the school is in excellent and adequate condition so that students can develop the ability of knowledge and skills. This also has an impact on improving student learning outcomes.

Workshop facilities have significant benefits in improving and facilitating teaching and learning activities at SMK Negeri 1 Tomohon. Growing students' ability to search, process, solve and solve a problem with full responsibility and their efforts to grow their attitude and independence of students to learn. Besides that, if supported by complete and adequate workshop facilities, carrying out work practices can increase students' knowledge abilities and make students become more active and get better learning outcomes (Sugiyono, 2021) in electrical power installation engineering subjects.

The results of research from Supriyatno also support this, that there is a significant influence between the completeness of valuable equipment on students' practical learning outcomes in the essential practice of electrical installation training for students of class X SMK Negeri 1 Bulukumba with a magnitude of 30.9% influence (Supriyatno, 2012). The findings of this study are consistent with the findings of previous research that found an effect between workshop facilities on the learning outcomes of electrical power installation engineering practices at SMK Negeri 1 Tomohon. This is evidenced by the results of research where the contribution of workshop facilities to student learning outcomes is 81.7%, and the remaining 18.3% is influenced by other variables outside of this research variable.

The significant contribution of the workshop facilities greatly influences the improvement of learning outcomes of electric power installation engineering practices at SMK Negeri 1 Tomohon.

Based on the research results conducted by researchers, vocational high schools should provide adequate and reasonable workshop facilities so that the expectations of teachers and students can be realized, namely an increase in student learning

outcomes in vocational practice learning. Theoretically, workshop facilities effectively improve learning outcomes of electric power installation engineering practice (Chan & Fok, 2009) for students at SMK Negeri 1 Tomohon.

This study examines the impact of workshop facilities on the learning outcomes of students at SMK Negeri 1 Tomohon's electric power installation engineering practice. The existence of this influence indicates that workshop facilities can be used and used as guidelines and references for improving student learning outcomes (Asri et al., 2019). Thus overall, it can be said that the hypothesis proposed in this study has been accepted and answers the problems and objectives of this study.

#### IV. CONCLUSION

The study shows workshop facilities impact the learning outcomes of electric power installation engineering practices for students at SMK Negeri 1 Tomohon. The study findings show that this received a significance value of  $.000 < .05$ , and the t-count value is more than the t-table value, precisely t-count = 11.191 > t-table 2.048 with an influence magnitude of 81.7%.

Based on the results of this study, the researchers suggest several things, namely: (i) For schools to maintain better maintain and utilize workshop facilities to improve students' abilities and skills; (ii) Subject teachers should be able to overcome the lack of existing facilities in the workshop so that practical learning activities can run well; (iii) Students should always maintain and take good care of workshop facilities so that they can be used in practice and use them to develop their skills; (iv) For further researchers who are interested in conducting similar and relevant research, they should consider or investigate various factors that may influence the learning results of electrical power installation procedures in SMK pupils.

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