



The Influence of Infrastructure on the Learning Outcomes of Vocational High School (SMK) Students

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ABSTRACT

School facilities and infrastructure are one of the most important things in the implementation of the learning process so that learning objectives can be achieved. The standard of infrastructure facilities of an educational institution has been regulated by the government through Government Regulation No. 19 of 2005 concerning National Education Standards which concerns the standards of educational facilities and infrastructure nationally. Increasing the ratio of Vocational High Schools (SMK) is one of the government's policies in fulfilling the quality of human resources that are ready to work, smart, and competitive, of course, to support the fulfillment of human resources through Vocational High School Education (SMK), adequate school facilities and infrastructure are needed in accordance with learning needs so that the learning process can be pursued effectively and learning objectives can be achieved. This research was carried out at SMK Negeri 3 Semarang on students majoring in Building Information Modeling Design (DPIB), with the research method used in this study is quantitative with an ex post facto approach. The variables used in this study are independent variables, namely the infrastructure of the Building Information Modeling Design (DPIB) laboratory of SMK Negeri 3 Semarang and variables related to the learning achievement of grade X students of Building Information Modeling Design of SMK Negeri 3 Semarang for the 2020/2021 academic year which are taken from the value of learning outcomes of technical drawing subjects. Data collection uses questionnaires and documentation to find data needed in research. Processing the research data was carried out with several tests including, validity tests using construct validity, reliability tests using the Alpha Cronchbach formula technique, then to determine the relationship and influence between variables using simple linear regression analysis. The results of the study averaged the percentage of student assessment of laboratory infrastructure of 77,087% included in the "Good" category. Student learning outcomes show an average score of 78.89 and have met the Minimum Completeness Criteria (KKM), and there is a significant influence between DPIB laboratory infrastructure and student learning outcomes in technical drawing subjects, which is 34.8%.

Keywords: *Learning outcomes, learning processes, facilities and infrastructure*

1. INTRODUCTION

Education is the main foundation of a nation's development, and Vocational High Schools (SMK) play a key role in preparing the young generation to achieve success in the world of work. In the last ten years, there has been a significant increase in international research exploring the relationship between infrastructure and student learning outcomes in various educational contexts. This research is supported by the fact that a good learning environment can influence student learning outcomes positively. The quality of human resources greatly

affects the development and progress of a nation, in fulfilling human resources, quality education is needed, thus education is one of the important aspects in the development of a nation [1].

Factors related to infrastructure, such as the availability of learning resources, can have a significant impact on student academic achievement [2]. In the vocational school context, aspects such as technology laboratories, libraries and vocational facilities are important elements in providing adequate learning experiences for students [3].

Highlight the importance of technology in learning in the current digital era, where the integration of technology in school infrastructure can improve student engagement and their learning outcomes [4]. Therefore, understanding the positive or negative impact of vocational school infrastructure on student learning outcomes is becoming increasingly crucial in facing the dynamics of global educational change [5].

Infrastructure is a the needs of all school members, especially those in teaching and learning process [6][7][8]. Learning in Secondary Schools Vocationalism involves technique and practice so it is closely related to availability adequate infrastructure so that supports students and teachers creating processes effective learning [9][10].

National education is currently still faced with various problems: 1) low equity and expansion of access to education; 2) low quality, relevance and competitiveness of educational output, and 3) low management of education management and accountability. The current government policy on national education is based on the vision, mission, and strategy set, namely producing intelligent and competitive Indonesian people . To support the vision and mission, the national education paradigm is also explained which is based on four aspects, namely: 1) full human empowerment, 2) student-centered lifelong learning, 3) education for all, and 4) education for development, development and / or sustainable development.

Increasing the ratio of Vocational High Schools (SMK) is one of the government's policies in fulfilling the quality of human resources who are ready to work, smart, and competitive. This will certainly support national economic growth.

School facilities and infrastructure are one of the most important things in the implementation of the learning process so that learning objectives can be achieved [11][12].

The standard of infrastructure facilities of an educational institution has been regulated by the government through Government Regulation No. 19 of 2005 concerning National Education Standards which concerns the standards of educational facilities and infrastructure nationally. In Government Regulation No. 19/2005 Chapter VII Article 42 it is expressly stated that; (1) Each educational unit must have facilities including furniture, educational equipment, educational media, books and other learning resources, consumables, and other equipment needed to support an orderly and continuous learning process. (2) Each education unit must have infrastructure which includes land,

classrooms, education unit leadership rooms, educator rooms, administration rooms, library rooms, laboratory rooms, workshop rooms, production unit rooms, canteen rooms, power and service installations, sports venues, places of worship, playgrounds, places of creation, and other spaces / places needed to support an orderly and continuous learning process. The standard of facilities and infrastructure for SMK, in particular, has been stated in Permendiknas No. 40 of 2008 which includes the minimum criteria for facilities and infrastructure that must be owned by a SMK.

Facilities and infrastructure in supporting the ongoing learning process greatly affect the growth of student learning motivation, thus affecting student learning outcomes [13]. Learning outcomes are one of the benchmarks to determine the achievement of learning objectives.

Facilities such as technology laboratories and complete workshops can provide practical experience to students. They can apply theoretical knowledge in real contexts, which can improve their understanding and practical skills [14]. In this case, schools can collaborate with industry so that they are able to produce graduates in accordance with industry criteria and are able to keep up with industry developments [15]. Many schools still have limited equipment so collaboration with industry is needed.

2. METHOD

The research method used in this study is quantitative with an ex post facto approach where this research is based on the philosophy of positivism, researching on certain populations or samples as planned, data collection using research instruments, statistical data analysis technique sand this research leads to the treatment of independent variables that have occurred before so that researchers do not need to give treatment again to independent variables, just look at the influence of relationships on dependent variables. This research was conducted at SMK Negeri 3 Semarang, the competence of Building Information Modeling Design expertise, with a sample of grade X students for the 2020/2021 school year who had attended the Technical Drawing subject totaling 58 respondents. The study was conducted between April 5 – May 5, 2021. The variables used in this study are independent variables, namely the infrastructure of the Building Information Modeling Design (DPIB) laboratory of SMK Negeri 3 Semarang and variables related to the learning achievement of grade X students of Building Information Modeling Design of SMK Negeri 3

Semarang for the 2020/2021 academic year which is taken from the value of learning outcomes of technical drawing subjects. Data collection uses questionnaires and documentation to find data needed in research. Processing of research data was carried out with several tests including, validity tests using construct validity, reliability tests using the Alpha Cronchbach formula technique, then to determine the relationship and influence between variables using simple linear regression analysis. An analysis of the condition of infrastructure facilities was also carried out using the formula:

$$P = F/N \times 100 \%$$

Information:

F = Number of respondents' answers

N = Number of Respondents

P = Percentage.

3. RESULTS AND DISCUSSION

The results of this study are student assessment data on infrastructure. The following are the results of taking student assessment data related to infrastructure using questionnaires that have been recapitulated in Table 1.

Table 1. Student Assessment Related to the Condition of DPIB Laboratory Infrastructure

No	Aspect	Percentage (%)
1	Comfort of space	75.06
2	Air condition	73.32
3	Noise level	75.51
4	Lighting	84.51
5	Chair	81.2
6	Table	73.94
7	Cupboard	77.89
8	Practice equipment	81.83
9	Jobsheet	74.14
10	Blackboard	74.14
11	Power outlet	71.05
12	Cleaning tools	76.91
13	Personal protective	79.15
14	equipment	81.19
Average		77.08

From Table 1, it can be seen that the average percentage of student assessment of laboratory infrastructure of 77,087% is included in the "Good" category. Learning outcomes are recapitulated in Table 2 which are the results of learning aspects of knowledge and skills.

Table 2. Learning Outcomes

Value	Knowledge	Skills	Criteria
85-100	9	7	Excellent
70-84	47	51	Good
55-69	2	0	Enough
40-55	0	0	Less
0-39	0	0	Very Lacking

The learning outcomes are then sought in relation to the results of the facility condition assessment questionnaire DPIB laboratory infrastructure uses a simple linear regression test. Simple linear regression testing was carried out using questionnaire result data with learning achievement of technical drawing subjects. The results of a simple linear regression test between variable X, namely infrastructure, and variable Y, namely learning outcomes, have a strong relationship, namely an R value of 0.639. Nilai F hitung sebesar 33,995. For the F value of the table with the denominator $dk = 1$ and the numerator $dk = n-2$ or 56 with a probability of 0.05, the table F value is 4.01. From these data, it can be known if the calculated F value is greater than the table F ($33.995 > 4.01$). Furthermore, it is known that the significance value of the regression test is 0.003, this value is less than 0.05 ($0.000 < 0.05$), which means that DPIB laboratory infrastructure has a significant influence on student learning outcomes in Engineering drawing subjects, and the Adjusted R Square value of 0.348 which means that infrastructure facilities have an influence of 34.8%.

4. CONCLUSION

School facilities and infrastructure are one of the most important things in the implementation of the learning process so that learning objectives can be achieved. From this study, it can be concluded that DPIB laboratory facilities and infrastructure have a significant influence on student learning outcomes in Engineering drawing subjects.

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