

Analysis of The Use of Learning Facilities to Improve Science Learning Achievement In MTs AL Jihad Kerasaan of Simalungun Regency North Sumatra

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Abstract.

School is an educational institution in charge of meeting the educational goals that have been entrusted through law. Therefore, efforts are needed to improve the educational quality based on students' achievement, which can be carried out through various ways by the stakeholders in the educational institution. The current research was conducted to identify the relationship between the use of learning facilities and science learning achievement. The method applied is descriptive quantitative using questionnaire data and deep interviews. The total population involved is 407 students, of which 186 of them were selected as the research samples using Proportional Stratified Random Sampling technique. Based on the research, it was revealed that there was a positive relationship between the use of learning facilities and science learning achievement, which is indicated by the correlation test of $r_{xy} (0.180) > r_{tab} (0.143)$. Furthermore, the deep interviews showed that students had difficulty in learning science because there were no laboratory facilities for the practicum as well as the limited infocus tools of only two units of audio-visual media. However, the teacher's improvisation in performing the practicum was categorized as quite good. Eventually, it can be summed up that learning facilities are one of the determining factors in improving student achievement. In this case, it is suggested for further research to add other variables to support the improvement of student achievement.

Keywords: Learning facilities, education quality, learning achievement

I. INTRODUCTION

According to the Law of National Education System no. 20 of 2003, Education is defined as a conscious and planned effort to realize a learning atmosphere and learning process where students can actively develop their potential to have religious-spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, society, nation, and state. Therefore, in this case the schools should have good education management by applying quality standards or quality-based education management. Furthermore, according to Dewi [1], education institution does not determine the education quality, instead it is determined by the desire of the community which has changing trends as time goes by. According to this trend, the community assessment on students' achievement will affect the quality of education. This leads to a tough task for schools or educational institutions to make efforts in improving the students' achievement because parents' perceptions of high

student achievement can lead to the perception that the school has a high quality. Learning achievement is a benchmark and indicator that students and schools successfully perform the learning process [2]. During the learning process, students' habit based on the learning experience, observation, and direct contact in the school environment and in the surrounding environment can become their inherent characters [3].

Therefore, schools need to make efforts continuously in improving the students' learning achievements through various ways during the learning process, including the teachers' skills, the use of learning methods and/or media models, fulfilment of learning facilities, students' activity competitions from local to international levels and other supporting programs. In this case, teacher skills are significantly needed to improve the students' achievement. Related to this, according to the results of previous research [4] showed that teachers must support and maximize children's emotional skills in every learning activity so that student achievement can also be maximized, because students' social skills will be more developed if they are supported through the provision of enthusiasm and moral messages from the teacher. In line with this research, another study [5] revealed that teachers should give rewards to students so that they can obtain achievement. In addition to the teachers' skills, they must provide moral support and rewards, teachers should have skills in mastering information and communication technology as well as good classroom management, because together they have a positive and significant relationship to student learning achievement [6].

In addition, there is also a significant relationship between the teachers' pedagogic competencies and students' learning achievement. This can lead to changes when teachers can realize it according to the existing competencies in the law of education, including: (a) understanding of educational insights or foundations, (b) understanding of students, (c) development of curriculum or syllabus, (d) learning design, (e) implementation of educational and dialogical learning, (f) understanding of learning technology, (g) evaluation of learning outcomes, and (h) development of students to realize their various potentials [7]. The use of learning models, methods and/or media is assumed able to improve the students' learning achievement according to results of previous research [8] in which talking stick learning method is able to improve student achievement in terms of cognitive, affective and psychomotor aspects. Furthermore, the Picture and Picture learning model also has a significant influence on learning achievement [9]. In addition, the Osborn learning model can also improve student-learning achievement because Osborn learning model has an essential role at each of its stages to improve the individual and group abilities in problem solving so that students can actively take a role in finding new learning concepts and build their own knowledge. Therefore, the knowledge they obtained will last for a long time and will be more meaningful [10].

Furthermore, the Teams Games Tournament (TGT) learning model also has the ability to improve students' learning achievement since during the game, the players (students) at each tournament table who represent the group are eager to be able to answer questions raised by the teacher, even before it is the player's turn to answer. In this case, there is a challenger who wants to answer immediately [11]. In teaching, the significance of learning facilities is not less than teachers' skills or even the use of learning models that have been scientifically tested to improve learning achievement. According to the previous study [2] learning facilities and classroom management has strong and significant relationship with the students' learning achievement. Furthermore, Bangun [12] another study revealed that if the learning facilities at home can be properly met, it will help students' learning activities, which can lead to the improvement of the students' learning achievement. Likewise the learning facilities at home, learning facilities at school also affect student learning achievement. This is proven by the research results [13] which show a significant influence between learning facilities and student achievement of 15.9%. In this case, the facilities that have not been fulfilled at the research location are the damaged basketball court, the damaged toilets, the absence of LCDs and projectors in each classroom, and the distance of the photocopy location around the environment. Based on the description above, there are many determinants of students' learning achievement at schools, both in terms of internal and external factors of the school and the students themselves.

In this case, the researcher focused on analyzing the relationship between learning facilities and students' science learning achievement at MTs Kerasaan of Simalungun Regency of North Sumatra. In accordance with the preliminary study that has been conducted by researchers at the research location, it was found that the general facilities are available and are in good condition, including the library, volleyball field, language laboratory, and prayer room. However, other facilities are lacking, such as the limited parking area, the absence of science laboratory, the lack of infocus unit, and the absence of computer laboratory. Several learning facilities which are in charge of supporting the science learning process such as the Science Laboratory, Field, and Infocus are still not optimal, thus the teacher tries to improvise/innovate the learning process. In this case, during the practicum, it was performed with minimal and easy-to-obtain tools and materials and the use of Infocus always coordinates with other teachers before the learning and teaching process are carried out. The importance of learning facilities and the problems found in the research location indicates the need to conduct a study to identify the correlation between the learning facilities in schools and the science learning achievement.

II. METHODS

This research was conducted through descriptive quantitative, in which the research data obtained were analyzed statistically and described. In this case, the

research data were collected in the form of a questionnaire on the use of learning facilities and learning achievement in science as well as conducting deep interviews to 10% of the sample group. More details about the research framework is presented in the following Figure 1.

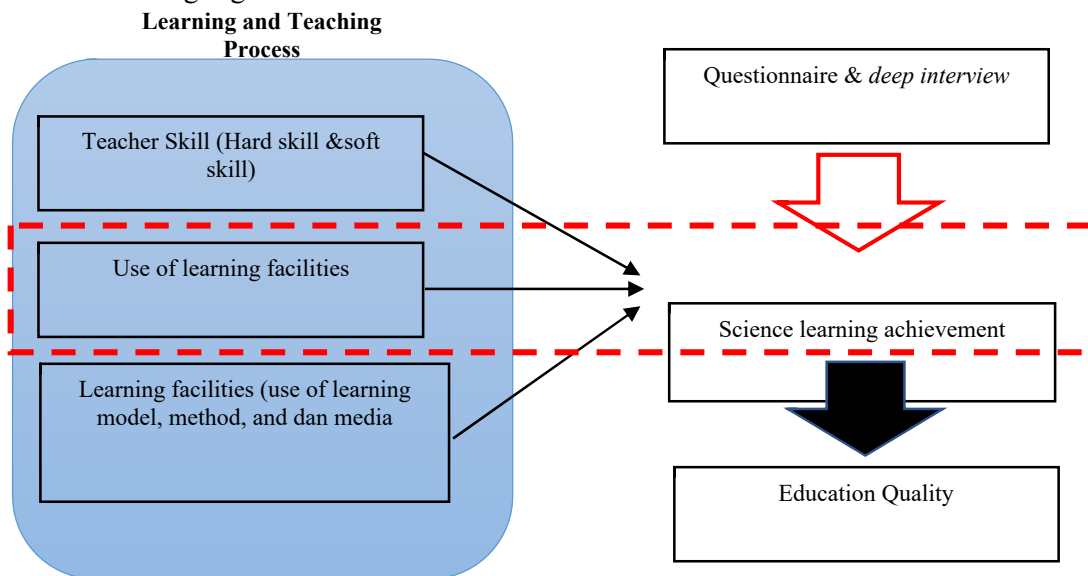


Fig 1. Research Framework

Population and Sample

This research was carried out in July-August 2021 at MTs (Islamic Junior High School) Al Jihad Kerasaan of Simalungun Regency of North Sumatra involving a total population of 407 students for grades VII to IX. Among this population, sampling was conducted using the Proportional Stratified Random Sampling technique, by determining the number of samples needed in advance and then taken from the total population involved. Sugiyono [14], further claims that to determine the sample size of a certain population is through the theory proposed by Isaac and Michael in the case of error rates of 1%, 5%, and 10%. Based on the opinion above and based on Isaac and Michael's table for an error rate of 5%, there are 186 students out of 407 total population. Furthermore, to determine the samples taken from each level, the following formula is used [15]:

$$Spl = \frac{n}{N} \times Js$$

Description:

- Spl : Number of sample in each level
- N : Number of respondent in the population
- n : Number of respondent in each level
- Js : Number of sample needed

For more detailed explanation, the determination of sample for each level can be seen in the Table 1. After the sample for each level is obtained, then the respondents were chosen randomly.

Table 1. Determination of sample for each level

No	Class	Population	Sample
1	VII	129	$\frac{129}{407} \times 186 = 58.95 = 59$
2	VIII	123	$\frac{123}{407} \times 186 = 56.21 = 56$
3	IX	155	$\frac{155}{407} \times 186 = 70.83 = 71$
	Total	407	186

Research Instrument

In this research, the instrument employed is questionnaire to determine the relationship between the use of learning facilities and students' science learning achievement at MTs Al Jihad Kerasaan of Simalungun Regency. In this case, questionnaire is a data collection tool by submitting written questions to be answered by students in accordance with the alternative answers provided. The questionnaire used contains 20 closed questions. Meanwhile, the answers to each questionnaire item uses a Likert scale which have a range from very positive to very negative, including: 5 = Strongly agree, 4 = Agree, 3 = Uncertain, 2 = Disagree, and 1 = Strongly disagree.

Table 2. Alternative answer in Likert Scale

Interval	Description
0% - 19,99%	Strongly Disagree (STS)
20% - 39,99%	Disagree (TS)
40% - 59,99%	Uncertain (RG)
60% - 79,99%	Agree (S)
80% - 100%	Strongly Agree (SS)

Source: Sugiyono [15]

In addition to using questionnaire data, researchers also performed a deep interview to 10% of the research samples to conduct deep analysis regarding the use of learning facilities on their science learning achievements.

Data Analysis Technique

In order to identify the relationship between the use of learning facilities and the learning achievement, then the correlation test proposed by Pearson, or commonly called as “Pearson Moment-Product Correlation” with the following equation, was applied:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X)^2\} \{N\sum Y^2 - (\sum Y)^2\}}} \quad [16]$$

III. RESULT AND DISCUSSION

Based on the Pearson product-moment correlation coefficient test, the r_{xy} result obtained is 0.180. Then, it was consulted with the critical price $r_{at} = 0.05$ with $N-2 = 184$, so, r_{tab} obtained (184.5%) is 0.143. Therefore, $r_{hit (xy)} > r_{tab}$ is $0.180 > 0.143$, indicating that the use of learning facilities has a positive relationship with science learning achievement. Meanwhile, the results of deep interview with 18 students from the selected sample showed that they had difficulties in learning science there were no laboratory facilities for the practicum so that learning motivation was low and leads to low learning achievement as well. In addition, when the students use learning facilities in the form of infocus, they become more enthusiastic than when they were taught conventionally or through lectures. The science learning process is often carried out by using learning facilities in the forms of infocus for teacher improvisation so that the practicum carried out is quite good. This is in accordance with the previous study [17] that the decrease of students' learning outcomes is caused by the lack of the application of science-supporting learning facilities. Meanwhile, creative learning must use existing media or tools such as SCIENCE KIT.

Another study from [18] states that learning facilities and learning motivation simultaneously take a role in learning achievement by 5.8%. When the learning facility available is adequate, it will support the individual teaching and learning process, thus the learning outcomes become optimal. Furthermore, learning facilities' function is quite important in learning activities. With the existence of learning facilities, learning activities will become easier and can be implemented well without any obstacles [19]. In this case, the laboratory is one of the science learning facilities for students. According to a previous study [20] the inappropriate use of laboratories from teachers and students to perform practicum causes students to have unfavorable attitudes and study habits. Moreover, schools whose practicum implementation is very lacking will produce a teaching and learning process which is less motivated so that the learning achievement obtained by students is not in accordance with what is expected.

In addition, the completeness of learning resources also has correlation with student learning achievement. In this case, a correlation between learning resources and the average score of the science national exam was found in the previous study [21] In his research, the science learning resources used were teachers, science laboratories, school libraries, compulsory textbooks, student worksheets, open spaces, school field, and learning models. MTs Al Jihad has several learning facilities that support teaching and learning activities for science subject, including school fields for learning biology in ecosystem or environmental materials. However, as an open space, the school field is relatively minimal and is only used as a volleyball field and or children's play. In addition, the absence of a laboratory in the school also caused problems in several some science materials. Based on the direct observation that has been conducted, the science teacher at the school can improvise conduct the practicum, for example in food test materials that should use laboratory equipment, they can use

used materials and reagents in the form of Lugol changed using betadine or materials containing iodine.

The next supporting facility at MTs Al Jihad for science learning is infocus. Although there are only 2 units of it available to be used in turns, this tool is important for the implementation of science learning media, one of which is audio-visual media which is believed to be able to further attract students' interest when learning science. Audio-visual technology-based learning can be used as an alternative tool in optimizing the learning process, due to several aspects, including: a) easily packaged in the learning process, b) is more interesting for learning, and c) can be edited (improved) at any time. By utilizing computer technology, it is expected that audio-visual learning can be used to deliver more interesting subject matter, including visualization of teaching material, so that it is more attractive for the students. Through the use of audio-visual media, learning can be more interactive and more likely to occur in two-way traffic in the learning process [22].

IV. CONCLUSION

In order to meet the learning achievement, many factors are needed to support it, such as the teachers' skills in carrying out the learning process, the use of learning facilities to support the teachers' skills, and students' intrinsic motivation in participating in the science learning process and others. Based on the results of the study, it revealed that there is the relationship between the learning facilities and learning achievement. Therefore, the learning facilities can be used by teachers as much as possible. In this case, if there are problems caused by the learning facilities, teachers should be able to improvise, so that the science learning achievements are fulfilled.

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