



The Influence of Environmental Conditions on Student Learning Achievement

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This study aims to determine the effect of the learning environment on student achievement in class XI SMA Negeri 2 Peusangan. This research approach is quantitative. This type of research is associative. The sample is 72 people. Data is collected through questionnaires and documentation. The results of the study found that the learning environment had no significant effect on student achievement in class XI SMA Negeri 2 Peusangan. Because students feel disturbed by air pollution in the form of dust flying from the highway so that it does not allow students to study in an open environment, besides that the noise of vehicles on the highway makes students unable to fully listen to the material delivered by the teacher. The better the arrangement and condition of the learning environment, the calmer and more comfortable the students will be in learning, thus the student achievement of SMA Negeri 2 Peusangan will also increase. And vice versa, that if the lower the student's environmental conditions, the lower the student's learning achievement in Biology subject.

Keywords: *Environmental Conditions, Learning Achievement, Air Pollution*



Introduction

The school is a special social space where education, training and personality development of children who are a community's future assets are founded and run by proper training methods, appropriate physical space and favorable psychological environment. Students in the process of socialization require a healthy environment and models so as to increase their performance. Since schools are the first model affecting students' personality, thus physical space of school as one of the important element for learning and education even in social perspective or spatial quality and its impact on students' development, play a major role [1].

All educational experts and educational psychologists agree that effective education depends on the existence of goals, the suitability of the physical and social environment of the class, the motivation of teachers and students to learn and teach, cognitive aspects, emotional and motor aspects of students. Preparation, good classroom management by teachers, their mastery of the subject, and their passion for their work and student progress. The teacher tries to create the perfect learning environment to prevent the formation of behavioral factors and distractions [2]

Schools as educational institutions should provide good facilities for their students in the learning process. Environmental factors play a very important role in supporting the development of students at school. In addition [3], Konstan argues that the learning process will take place effectively only in a supportive, safe and secure environment. Thus, educational institutions must be able to maintain and improve the quality of the school environment to create effective learning [4].

School environment includes all the components that contribute to create an environment in teaching learning process. Learning environment consists of both physical and non-physical (social, psychosocial, cultural) environments that exist in leaning situation [5]. It cannot be only physical side to explain environment issue. It also includes non-physical components such as social interaction at school that involves all the school members. Furthermore, VidačekHainš explain that an environment of the students learning encompasses a whole range of variables in the area of psychological, pedagogical, and cultural research. In other words, school environment is an integration all the school elements in influencing the situation of learning activities [6].

The achievement of students' study is influenced by complicated factors. One of those important factors is students' interest. Subject interest gave impact to learners four times greater than the impact caused by quality of teaching [7]. Students' interest is able to influence learning outcomes and motivate students to reach the goal in learning [8]. It means that students' interest takes part significantly to motivate students in English learning process and helps students to grab their goals in study. Thus, they can be able to reach the better achievement in English subject with their good interest. With the high interest, students will be



more willing in learning language as foreign language, particularly English which is claimed as a difficult subject to learn.

Since we find that school environment has significant correlation to students' interest as Gandhi states, school should increase the quality of components of school environment to raise the students in success learning [9]. A teacher as the educator sometimes does not pay attention to the need of students and their personal interest' that can influence their achievement in learning. Teacher primarily takes responsibility for creating conducive learning environment in the classroom. She/he can develop enjoyable classroom activities by taking advantages of the use of learning tools and positive social relationship [10] [11].

Theoretically, paying attention to environmental factors affecting the educational environments and foresight on supplying facilities and needs of educational spaces not only help managers and planners in adopting right and realistic decisions, but also they are necessity of any kind of educational planning [3]. On the other hand, in applied area, understanding environmental factors affecting the educational process and considering them in planning increases mental health of students and reduces their stress, resulting in enhanced educational performance.

The aim of this study was to determine the effect of environmental conditions on student achievement in class XI SMA Negeri 2 Peusangan.

Method

This study uses a quantitative approach with a case control research design, namely the effect factors (dependent variable) are identified first, then the risk factors (independent variables). This type of research is associative. Associative research is research that is used to calculate the magnitude of the relationship between the dependent variable and the independent variable.

This research was conducted at SMA Negeri 2 Peusangan. Data collection will be carried out in odd semester science classes. The population in this study were 263 students in science class, so the sample obtained using the Slovin formula was 72 people. The data collection technique used in this research is data on environmental conditions and student achievement data. The data obtained were analyzed using the correlation and determinant formulas.

Result

1. Descriptive Analysis

This section discusses the description of the data for the variables used are environmental conditions and student learning outcomes. As for the description of the research variables obtained from the questionnaire that has been distributed.

Environmental Conditions

Environmental condition indicators used in this study are comfort, cleanliness and safety. The results showed that the majority of students stated that the environmental conditions were uncomfortable (66.66%), most stated that they were clean (68.05%) and most stated that they were safe (70.83%). In detail, the environmental conditions of SMA Negeri 2 Peusangan can be seen in the following table:

Table 1 Environmental Conditions

No	Environmental Conditions	Frequency	Percentage (%)
1	• Comfortable	32	44,44
	• Uncomfortable	40	66,66
2	• Clean	49	68,05
	• Not Clean	23	31,95
3	• Safe	51	70,83
	• Not Safe	21	29,17

Source: Processed Data, 2015

Learning achievement

Student achievement data at SMA Negeri 2 Peusangan were obtained from report cards for the 2013/2014 school year. Based on data on student report cards, student learning outcomes are in the range of 76-85 = satisfactory; 86-100 = very satisfactory with a mean of 85.93. Therefore, by using the applicable academic assessment criteria, it can be concluded that the learning outcomes of SMA Negeri 2 Peusangan students are at satisfactory and very satisfactory. The results of the analysis of student learning outcomes at SMA Negeri 2 Peusangan can be seen in the following table:

Table 2 Student Learning Achievement

	The number of Students	Minimum	Maximum	Mean	Standar Deviasi
Learning Outcomes	72	80	92	85,93	12
Valid n	72				

(note:0-40 = unsatisfactory; 41-60=not satisfactory; 61-75=quite satisfactory; 76-85 = satisfactory; 86-100=very satisfactory)

2. The Influence of Environmental Conditions on Student Achievement of Class XI SMA Negeri 2 Peusangan

The following data were collected by the author from two sources, namely data on environmental condition questionnaire scores and student achievement at SMA Negeri 2 Peusangan in Biology subject. This data is divided based on the variables studied, namely environmental condition variables and learning achievement variables. Data on environmental condition variables were obtained from the results of questionnaire calculations which were distributed to students of class XI IPA, while learning achievement data were obtained from the Biology score ledger obtained by researchers based on the final semester exam scores for the 2014-2015 academic year. Based on the data, the average value of the questionnaire results for the environmental condition variable was 68.87, while the average student achievement was 85.93.

Correlation

If the correlation coefficient is 0.70 to close to 1.00 (plus or minus) indicating that the degree of relationship is high, the correlation coefficient is greater than 0.40 to below 0.70 (plus or minus) indicating a moderate degree of relationship, if the correlation coefficient above 0.20 to 0.40 (plus or minus) indicates a low or weak degree of relationship.

Table 3 Correlation between Environmental Conditions and Learning Achievement

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.130 ^a	.169	-.004	2.14900	1.627

a. Predictors: (Constant), kondisi_lingkungan

b. Dependent Variable: prestasi_belajar

The table above shows the results of a correlation coefficient of 0.130 or 13.0 which means that the relationship between the independent variable (environmental conditions) and the dependent variable (learning achievement) is categorized as showing a low relationship. This is in accordance with previous studies where the results of hypothesis testing show that the environment has a negative effect on student learning and student achievement.

Calculation of the correlation of environmental condition variables with student achievement can also be calculated using the correlation level formula (correlation). The formula used to calculate the Simple Correlation Coefficient is as follows: (This formula is also called the Pearson Product Moment)

$$r = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\{n\sum x^2 - (\sum x)^2\} \{n\sum y^2 - (\sum y)^2\}}}$$

Where :

n = Number of X and Y data pairs

$\sum x$ = Total Amount of Variable X

$\sum y$ = Total Amount of Variable Y

$\sum x^2$ = Square of the Total Number of Variables X

$\sum y^2$ = Square of the Total Number of Variables Y

$\sum xy$ = Multiplication Result of the Total Number of Variables X and Variable Y

$$\text{Relationship Level (r)} = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\{n\sum x^2 - (\sum x)^2\} \{n\sum y^2 - (\sum y)^2\}}}$$

$$\text{Relationship Level (r)} = \frac{72\sum 425991 - (\sum 4959)(\sum 6187)}{\sqrt{\{72\sum 4822,74 - (\sum 4822,74)^2\} \{72\sum 7388,59 - (\sum 7388,59)^2\}}}$$

$$\text{Relationship Level (r)} = \frac{30671352 - 30681333}{\sqrt{\{347237,28 - 23258821\} \{531978,48 - 54591262\}}}$$

$$\text{Relationship Level (r)} = \frac{-9981}{\sqrt{-22911584-54059284}}$$

$$\text{Relationship Level (r)} = \frac{-9981}{\sqrt{-76970868}}$$

$$\text{Relationship Level (r)} = \frac{-9981}{-8773,64}$$

$$\text{Relationship Level (r)} = 0.130$$

Determinant

The results of the coefficient of determination presented in Table 3 above show a coefficient of determination of 0.169. This value means that the ability of the independent variable (environmental conditions) can explain its effect on the dependent variable (learning achievement) of 16.9%, the remaining 83.1% is influenced by other variables not included in

this research model such as interests, learning facilities, the way the teacher teaches, and so on. Determination test can also be calculated using the following formula:

$$d = r^2 \times 100\%$$

Where:

d = coefficient of determination

r = correlation coefficient

$$d = r^2 \times 100\%$$

$$d = 0,130^2 \times 100\% = 0,0169 = 16,9\%$$

Hypothesis Test

Partial statistical tests are carried out by comparing the calculated t values with t tables with criteria; if the calculated t value is greater than t table, then the observed variables significantly affect student achievement. Conversely, if the calculated t value of the observation variable is smaller than the t table value, then this variable has no effect on learning achievement. While the t table value at $df = n - k$ ($72 - 2 = 74$) is 1,662. In addition to the t test, the criteria for significance can also be seen in the sig value. at $\alpha = 0.05$ (both directions). The results of partial hypothesis testing are shown in the table below;

Table 4 Hypothesis Testing Results

Coefficients ^a		
Model	T	Sig.
1 (Constant)	44.266	.000
kondisi_lingkungan	1.192	.395

a. Dependent Variable: prestasi_belajar

The estimation results found that the calculated t value of the environmental condition variable was 1,192 less than the t table value of 1.662 or a significance value of 0.0395 was greater than $\alpha = 0.05$ which means that the environmental condition variable did not have a significant effect on student achievement. Hypothesis testing can also be calculated using the following formula:

$$t_{hitung} = \frac{r\sqrt{(n-2)}}{\sqrt{1-r^2}}$$

The criteria are as follows:

If $t_{count} < t_{table}$ with $\alpha = 5\%$ (n-2) then H_0 is accepted

If $t_{count} > t_{table}$ with $\alpha = 5\%$ (n-2) then H_0 rejected (alternative hypothesis is accepted)

$$t_{count} = \frac{0.130\sqrt{(72-2)}}{\sqrt{1-0.130^2}}$$

$$t_{count} = \frac{0.130\sqrt{(70)}}{\sqrt{0,831}}$$

$$t_{count} = \frac{0.130(8,36)}{0,911}$$

$$=1.192$$

Discussion

School environment means the level to which educational institution settings promote student safety and student health. The school settings may include the physical plant, the academic environment, the mental health services, the adequacy of disciplinary procedures that have been supported by relevant research and an assessment of validity. However, school environment not only includes the services and facilities the school provides, but also includes the relationship between student and student; student and teacher [12]. School environment includes classroom, library, technical workshop, relation between student and student, and the way teacher teach students in the classroom. Thus, the interaction among students, teachers, and other members of school can be considered as the school environment factors [13].

The results of data processing that has been done, using correlation found that the relationship between environmental conditions and learning achievement is in the range which illustrates that the relationship between variable X and variable Y is at a low level. Thus the effect of environmental conditions on student achievement in SMA Negeri 2 Peusangan is low.

While the test results using the t-test concluded that $t_{count} < t_{table}$ ($1,192 < 1.667$), so that there is acceptance of H_0 or rejection of H_a where $t_{count} < t_{table}$. Thus it can describe the relationship between variable X and variable Y at a low level. Thus the effect of environmental conditions on student achievement in SMA Negeri 2 Peusangan is low.

The results of this study are not in line with research conducted by Orlu Chukwuemeka yang menyatakan bahwa Location/setting of school is one of the environmental factors that influence the academic performance of secondary school students. Conducive environment enhances a child's growth and development. But schools sited near airports or at the heart of city like Port



Harcourt city are always and leads to deficits in mental concentration of students in such schools [14].

Based on the description of the thoughts above, it can be understood that in real terms environmental conditions can actually have a positive effect on student achievement at SMA Negeri 2 Peusangan. This means that the better the arrangement and conditions of the learning environment, the calmer and more comfortable the students will be in learning, thus the student achievement of SMA Negeri 2 Peusangan will also increase.

Summary

The learning environment has no significant effect on student achievement in class XI SMA Negeri 2 Peusangan. Because students feel disturbed by air pollution in the form of dust flying from the highway so that it does not allow students to study in an open environment, besides that the noise of vehicles on the highway makes students unable to fully listen to the material delivered by the teacher. The better the arrangement and condition of the learning environment, the calmer and more comfortable the students will be in learning, thus the student achievement of SMA Negeri 2 Peusangan will also increase. And vice versa, that if the lower the student's environmental conditions, the lower the student's learning achievement.



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