ANALYSIS OF FACTORS AFFECTING ACHIEVEMENT STUDENT LEARNING DURING A PANDEMIC

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1,2,3,4 Case study at SDN 1 and Iwul cluster 2 Iwul, parung, Bogor, West java Indonesia.
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Abstract

The purpose of this study was to determine the effect of teacher competence, infrastructure, and work discipline on student achievement at SDN 1 and Iwul Cluster 2 Iwul. This research method uses descriptive and verification analysis with a quantitative approach. The source of this research uses primary data. This research data collection using a questionnaire. The sample of this research was 87 students of SDN 1 and Iwul Gugus 2 Iwul class V and class VI using the saturated sampling technique. Data analysis was done by descriptive analysis and multiple regression analysis. The results of this study indicate that there is a positive and significant influence between Teacher Competence, Infrastructure, and Work Discipline simultaneously on Student Learning Achievement, where these variables have an influence of 83.7% on Student Achievement. Partially there is a positive and significant influence between Teacher Competence, Infrastructure, and Work Discipline on Student Learning Achievement. The influence of teacher competence on student achievement is 34.13%, the influence of facilities and infrastructure on student achievement is 27.84% and the influence of work discipline on student achievement is 21.67%.

Keywords: Teacher Competence, Infrastructure, Work Discipline, Student Achievement.

INTRODUCTION

The problem to be studied based on the background of the problem above can be formulated as follows: 1. What is the description of teacher competence, facilities and infrastructure, work discipline, and student achievement at SDN 1 and Iwul Gugus 2 Iwul, Parung, Bogor, West Java?; 2. How is the influence of teacher competence on student achievement at SDN 1 and Iwul Gugus 2 Iwul, Parung, Bogor, West Java?; 3. How is the influence of infrastructure on student achievement at SDN 1 and Iwul Gugus 2 Iwul, Parung, Bogor, West Java?; 4. How does work discipline affect student achievement at SDN 1 and Iwul Gugus 2 Iwul, Parung, Bogor, West Java?; 5. How is the influence of teacher competence, infrastructure, and work discipline on student achievement at SDN 1 and Iwul Gugus 2 Iwul, Parung, Bogor, West Java?

A. Teacher Competence

According to the General Indonesian Dictionary by Purwadarminto (2017: 405), the notion of competence is the power to determine or decide something. According to Sahertian (2019: 73), teacher competence is the ability to carry out teaching and educating tasks obtained through education and training.

According to Sudrajat (2018:39), teacher competence is a description of what a teacher should be able to do in carrying out his work, both in the form of activities in behavior and the intended results. According to Sudjana (2016: 17), teacher competence is a basic ability that must be possessed by a teacher.

Based on the description above, teacher competence can be defined as the ability/skills of a teacher in the form of knowledge, skills, attitudes, and values obtained through education and training so that they can carry out their duties properly. According to Mardiyanto (2016:17), there are several indicators of teacher competence, namely as follows:

1. Professional Competence is the ability to master the knowledge in the field of science, technology, and or the arts that he has.
2. Social Competence is the ability in terms of master traits related to society.
3. Pedagogic ability is the ability to manage student learning.
4. Personality Ability is the ability in terms of master of personality traits.

**B. Infrastructure**

Learning facilities and infrastructure is something that can facilitate and expedite the implementation of abusines which can be in the form of objects. In this case, learning facilities and infrastructure can be equated with learning facilities. It is very likely that learning facilities and infrastructure are factors that have a major contribution to improving learning outcomes. According to Nana Syaodih (2019) "Learning facilities are all that is needed in the teaching and learning process, both mobile and immobile in order to achieve educational goals that run smoothly, regularly, effectively, and efficiently". Mulyasa (2018) states that educational facilities are equipment and equipment that are directly used and support the educational process, especially the teaching and learning process such as buildings, classrooms, desks, and chairs, as well as learning tools and media, while what is meant by educational infrastructure are learning facilities which indirectly support the course of the education or teaching process such as yards, gardens, school parks, roads to schools but if used directly for teaching and learning processes such as school gardens used by schools for teaching Environmental Education, schoolyards as well as sports fields, these components are an educational infrastructure.

It can be concluded that what is meant by learning facilities and infrastructure are facilities that either directly or indirectly support the educational process, especially the teaching and learning process both movable and immovable so that the achievement of learning objectives can run smoothly, regularly, effectively and efficiently. The indicators of infrastructure that have been put forward by the Ministry of National Education (2018: 37), are as follows:

1. WAG (Whatsapp Group) teacher and student interactions tend to give assignments to students related to learning activities.
2. The application's Youtube link contains videos for learning basic locomotor movements, non-locomotor basic movements, and examples of students' basic games available in the application.
3. Google Classroom is an online platform for mixed learning applications that can be used for free. Educators can share the class code or invite students.
4. Zoom is an application that provides remote conferencing services by combining video conferencing, online meetings, chat, and mobile collaboration.

**C. Work Discipline**

Work discipline is a person's awareness and willingness to obey all company regulations and applicable social norms (Hasibuan, 2016: 444). According to Sutrisno (2017: 87), discipline is an attitude of respect for company rules and regulations, which are in employees, which causes them to adapt voluntarily to company rules and regulations.

According to Rivai (2018: 825), a work discipline is a tool used by managers to communicate with employees so that they are willing to change behavior as well as an effort to increase their awareness and willingness to comply with all company regulations. Discipline has an important role for every employee and in the progress of a company. With the disciplined attitude of each employee, it is hoped that every wheel of the company's activities can run smoothly so that the goals of the company can be achieved optimally.

From several definitions of work discipline put forward by several experts, it can be concluded that work discipline is an attitude of awareness, willingness, and willingness of a person to obey and obey the rules and social norms that apply in the surrounding environment.
The Work Discipline Indicators put forward according to Sutrisno (2017) are as follows:

1. Obey the rules of time. Which cover:
   a. Working hours.
   b. Home time.
   c. Timely rest hours in accordance with applicable regulations in the company, organization/or institution.

2. Comply with organizational and agency regulations, which include:
   a. Basic rules about how to dress.
   b. Behave at work.

3. Adhere to the rules of conduct at work, which include:
   a. Shown by doing the work in accordance with the position and duties.
   b. Responsibilities at work.

4. Comply with other regulations in the organization/agencies, which include:
   a. Rules about what employees can and cannot do in the organization.

**D. Student Achievement**

According to Tukiran, Irma, and Real (2016:106) learning achievement is related to test results that reflect students' ability to master the material. Dimyati and Mudjiono (2018:11) define learning achievement as an achievement of teaching goals determined by increasing students' mental abilities. Furthermore, according to Gunarsa (2016: 28) learning achievement is the maximum result achieved by a person after making a learning effort.

Based on the description above, it can be stated that learning achievement is the result of learning activities or learning achievement is the result of learning/school value achieved by students based on their ability/effort in learning and is usually expressed in the form of numbers or letters listed in report cards.

According to Shah (2016:148), there are several indicators to see student learning outcomes including:

1. In the cognitive domain, a person can be seen from observation, memory, understanding, application, analysis, and synthesis.

2. In the affective domain, a person can be seen from acceptance, welcome, appreciation (appreciation), internalization (deepening), and characteristics (appreciation).

3. In the psychomotor realm, a person can be seen by moving and acting skills, and verbal and nonverbal expression skills. Time consisting of: consistently promoting on social media, consistently promoting by being a sponsor at an event

**METHODS**

This study uses a quantitative approach. The method used by the author in this study is a descriptive verification method. Descriptive research is research that intends to make a description of situations or events. While the verification method,
according to Sugiyono (2019: 62) is a research question that is asking between two or more variables. The purpose of this research is to test or verify a theory rather than develop it. So in this study, it is necessary to propose a theory.

This research was conducted to see whether there is an influence of Teacher Competence, Infrastructure, Work Discipline on Student Achievement. The verification analysis method used in this study is to analyze the causal relationship between variables and test the hypothesis of this study systematically, then the analytical tool used is multiple regression analysis using SPSS 23.0 software.

The research data was obtained using a questionnaire/questionnaire. The sample for the study was 87 students from SDN 1 and Iwul Cluster 2 Iwul in grades V and VI. Sampling was carried out using a saturated sampling technique in which the entire population was sampled. Primary data in the form of a questionnaire filled out by the respondents will be processed using regression analysis. The regression model is used to assume that there is an effect of Teacher Competence, Infrastructure, and Work Discipline on Student Achievement at SDN 1 and Iwul Cluster 2 Iwul. So that the general form of the regression analysis equation used in this study is as follows:

Model 1: \[ Y = a_1 + b_1X_1 + b_2X_2 + b_3X_3 + e \]

Where:

- \( a = \) Constant
- \( X_1 = \) Teacher Competence
- \( X_2 = \) Infrastructure
- \( X_3 = \) Work Discipline
- \( Y = \) Student Achievement
- \( b = \) Regression coefficient
- \( e = \) error term

The following are the hypotheses in this study:

H1: There is an influence of teacher competence on student learning achievement
H2: There is an influence of Infrastructure on Student Achievement
H3: There is an effect of Work Discipline on Student Achievement

RESULTS AND DISCUSSION

Based on the descriptive analysis carried out, the findings of the percentage scores of each variable of Teacher Competence, Student Facilities, and Work Discipline are shown in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Indicator</th>
<th>Actual Score</th>
<th>% Score</th>
<th>Desc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher competence</td>
<td>in mastering characteristics of students</td>
<td>293</td>
<td>67.36</td>
<td>Good</td>
</tr>
<tr>
<td>Teacher competence</td>
<td>in planning lessons in class</td>
<td>284</td>
<td>65.29</td>
<td>Enough</td>
</tr>
<tr>
<td>Teacher competence</td>
<td>in providing subject matter</td>
<td>286</td>
<td>65.75</td>
<td>Enough</td>
</tr>
<tr>
<td>Faculties and Infrastructure (X2)</td>
<td>Interaction of teachers and students in giving assignments</td>
<td>277</td>
<td>63.68</td>
<td>Enough</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------------------------------------------</td>
<td>------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Teachers take advantage of learning videos on youtube</td>
<td>292</td>
<td>67.2</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>The teacher gives a video example of solving a problem</td>
<td>290</td>
<td>66.7</td>
<td>Enough</td>
<td></td>
</tr>
<tr>
<td>The teacher uses google classroom as a place to collect assignments</td>
<td>296</td>
<td>68.1</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>The teacher provides learning materials using the zoom</td>
<td>287</td>
<td>65.9</td>
<td>Enough</td>
<td></td>
</tr>
</tbody>
</table>

| Total Infrastructure | 1442 | 66.6 | Enough |

<table>
<thead>
<tr>
<th>Work Discipline (X3)</th>
<th>Compliance with working hours</th>
<th>302</th>
<th>69.4</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>The level of attendance in carrying out work activities in accordance with the provisions</td>
<td>289</td>
<td>66.4</td>
<td>Enough</td>
<td></td>
</tr>
<tr>
<td>Obedience to the rules of the provisions that must be obeyed</td>
<td>303</td>
<td>69.6</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Obedience to the dress code in accordance with the provisions of the agency</td>
<td>296</td>
<td>68.05</td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Follow directions</td>
<td>286</td>
<td>65.75</td>
<td>Enough</td>
<td></td>
</tr>
</tbody>
</table>
Based on the descriptive analysis above, it shows that the Teacher Competency variable shows that the qualification score obtained is 2320 with a percentage score of 66.55% so it is categorized as sufficient. The lowest score in Effectiveness of interaction with parents of students.

While the Sarana Prasarana variable shows that the actual score obtained is 1442 with a score percentage of 66.62% so it is categorized as sufficient, the indicator in this variable that has the largest score is the teacher indicator using google classroom as a place to collect assignments, but the teacher and student interaction indicator in providing task has the lowest score on this variable.

The Work Discipline variable shows that the actual score obtained is 2344 with a percentage score of 67.01% so it is categorized as Good. The indicator of work discipline with the highest percentage is the indicator of Compliance with the rules and regulations that must be obeyed, while the indicator with the lowest percentage is the indicator of following directions.

In the Student Learning Achievement variable, the actual score is 2303 so the percentage score of 66.38% indicates that this variable is in the sufficient category, the indicator on this variable that has the largest score is the understanding indicator. Meanwhile, the lowest indicator is the welcome indicator.

The next analysis is a verification analysis, this analysis was conducted to determine the effect of Teacher Competence, Infrastructure, and Work Discipline on Student Achievement at SDN 1 and Iwul Gugus 2Iwul. A series of regression analysis processes include testing the assumption of normality, analysis of the regression coefficients and the coefficient of determination as well as hypothesis testing.
Normality Assumption Test

By using SPSS 23 software, the results of the Kolmogorov-Smirnov (K-S) test are as follows:

**Table 2. Kolmogorov Smirnov Test**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unstandardized Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>87</td>
</tr>
<tr>
<td>Normal Mean</td>
<td>.0000000</td>
</tr>
<tr>
<td>Parametersa,b</td>
<td>Std. Deviation</td>
</tr>
<tr>
<td>Most Extreme</td>
<td>Absolute</td>
</tr>
<tr>
<td>Differences</td>
<td>Positive</td>
</tr>
<tr>
<td>Negative</td>
<td>-.060</td>
</tr>
<tr>
<td>Test Statistic</td>
<td>.066</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.200c,d</td>
</tr>
</tbody>
</table>

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

From the results of the Kolmogorov Smirnov test, it can be seen that the significance value of the unstandardized residual has a significance greater than 0.05, thus it can be concluded that the data is normally distributed.

Regression Equation

Multiple linear regression model was used to determine the equation model of Teacher Competence, Infrastructure, and Work Discipline on Student Achievement at SDN 1 and Iwul Cluster 2 Iwul obtained as follows:

**Table 3. Regression Coefficient Results (X1, X2, X3 Y)**

<table>
<thead>
<tr>
<th>Coefficientsa</th>
<th>Unstandardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>B</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>1.157</td>
</tr>
<tr>
<td>X1</td>
<td>.376</td>
</tr>
<tr>
<td>X2</td>
<td>.502</td>
</tr>
<tr>
<td>X3</td>
<td>.258</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Y

Based on table 3, the values of the constants and regression coefficients can be obtained so that a linear regression equation can be formed as follows:

\[ Y = 1.157 + 0.376X1 + 0.502X2 + 0.258X3 + e \]
To find out whether there is an effect of Teacher Competence, Infrastructure, and Work Discipline on Student Achievement at SDN 1 and Iwul Cluster 2 Iwul, a Hypothesis Test will be carried out.

Hypothesis testing

The significance test of the regression coefficient is used to analyze if the researcher intends to know the effect between the independent and dependent variables. The hypotheses that will be proposed and verified are as follows:

"There is a significant influence between Teacher Competence, Infrastructure, and Work Discipline simultaneously on Student Achievement at SDN 1 and Iwul Cluster 2 Iwul".

Simultaneous Statistical Hypothesis

Ho: \( b_1 = 0 \)

Meaning: There is no significant effect between Teacher Competence, Infrastructure, and Work Discipline simultaneously on Student Learning Achievement

Ha: \( b_1 \neq 0 \)

It means: There is a significant influence between Teacher Competence, Infrastructure, and Work Discipline simultaneously on Student Learning Achievement

The significance level of (5%) and degree of freedom (df)=n-(k+1) = 87-4=83, it is found that the ttable value of the t-table value of the two-party t distribution is 1.989. Where the decision-making criteria used are tcount 1.989 and the significance value is less than 0.05, then \( H_0 \) is rejected and \( H_a \) is accepted. The regression coefficient significance test in this study used SPSS 23 as shown in the table below.

<table>
<thead>
<tr>
<th>Table 4. Hypothesis Test Results (X1, X2, X3, X4 □ Yi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA\textsuperscript{a}</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>3161.776</td>
<td>3</td>
<td>1053.925</td>
<td>141.61</td>
<td>.000b</td>
</tr>
<tr>
<td>Residual</td>
<td>617.741</td>
<td>8</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3779.517</td>
<td>8</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Y

b. Predictors: (Constant), X3, X2, X1

In the hypothesis regarding the effect of Teacher Competence, Infrastructure, Work Discipline simultaneously on Student Achievement at SDN 1 and Iwul Cluster 2 Iwul obtained that the value of sig. (0.00)

<0.05 so \( H_0 \) is rejected, which means that there is an influence between Teacher Competence, Infrastructure, and Work Discipline simultaneously on Student Achievement at SDN 1 and Iwul Cluster 2 Iwul.

Furthermore, it will be seen whether there is a partial effect of Teacher Competence, Infrastructure, and Work Discipline on Student Achievement.
Partial Statistical Hypothesis

Hypothesis 1

Ho: \( b_1 = 0 \)

Meaning: There is no significant effect between Teacher Competence on Student Achievement

Ha: \( b_1 \neq 0 \)

It means: There is a significant influence of teacher competence on student learning achievement.

Hypothesis 2

Ho: \( b_1 = 0 \)

Meaning: There is no significant effect between Infrastructure and Student Achievement

Ha: \( b_1 \neq 0 \)

It means: There is a significant influence of Infrastructure on Student Achievement.

Hypothesis 3

Ho: \( b_1 = 0 \)

Meaning: There is no significant effect between Work Discipline on Student Achievement.

Ha: \( b_1 \neq 0 \)

Meaning: There is a significant effect of Work Discipline on Student Achievement.

The significance level of (5%) and degree of freedom \((df)=n-(k+1) = 87-4=83\), it is found that the \(t\) value of the two-party \(t\) distribution is 1.989. Where the decision-making criteria used are \(t\) count 1.989 and the significance value is less than 0.05, then \(H_0\) is rejected and \(H_a\) is accepted. The regression coefficient significance test in this study used SPSS 23 as shown in the table below.

**Table 5. Hypothesis Test Results**

<table>
<thead>
<tr>
<th>Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>X1</td>
</tr>
<tr>
<td>X2</td>
</tr>
<tr>
<td>X3</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Y
In Table 5, the following conclusions are obtained:

- In the hypothesis regarding the influence of teacher competence on student learning achievement, it was found that the tcount value was 3.775 with ttable 1.989 so that the tcount value > from ttable and it was known that sig. (0.00) <0.05 so H0 is rejected, which means that there is an influence between Teacher Competence on Student Achievement.

- In the hypothesis regarding the effect of infrastructure on student learning achievement, it was found that the tcount value was 3.589 with ttable 1.989 so that the tcount value > from ttable and it was known that sig. (0.001) <0.05 so H0 is rejected, which means that there is an influence between Infrastructure and Student Achievement.

- In the hypothesis regarding the effect of work discipline on student learning achievement, it was found that the tcount value was 2.558 with ttable 1.989 so that the tcount value > from ttable and it was known that sig. (0.012) <0.05 so H0 is rejected, which means that there is an influence between Work Discipline on Student Achievement.

To determine the magnitude of the influence of the independent variable on the dependent variable, an analysis of the coefficient of determination will be carried out.

Coefficient of Determination Analysis

The coefficient of determination is used to see the percentage of influence given by Teacher Competencies, Infrastructure Facilities, and Work Discipline simultaneously on Student Learning Achievement. By using the IBM SPSS 23 program, we get:

Table 6. Coefficient of Determination Results (X1, X2, X3→Y1)

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.915</td>
<td>.837</td>
<td>.831</td>
<td>2.728</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), X3, X2, X1

b. Dependent Variable: Y

Based on Table 6, obtained an R-Square value of 0.837 which indicates that the large percentage of the influence given by Teacher Competence, Infrastructure, and Work Discipline simultaneously on Student Learning Achievement is 83.7%, while the rest is (1-R2) = 16.3% explained by other reasons outside the model.

The partial determination coefficient between Teacher Competencies, Infrastructure, Work Discipline on Student Achievement can be calculated by the following formula:

\[ KD = B \times \text{Zero Order} \times 100\% \]

(Gujarati, 2017:172)

Information:

\( B = \) Standard Regression Coefficient

Zero Order = Correlation Matrix of Independent and Bound Variables
The following are the standardized coefficient values of beta and zero-order.

**Table 7 - Partial Correlation Results**

<table>
<thead>
<tr>
<th>Variabel Independent</th>
<th>Standardize d Coefficients Beta</th>
<th>Zero - order</th>
<th>Nilai R2 Persial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kompetensi Guru</td>
<td>0.387</td>
<td>0.882</td>
<td>34.13%</td>
</tr>
<tr>
<td>SaranaPrasarana</td>
<td>0.323</td>
<td>0.862</td>
<td>27.84%</td>
</tr>
<tr>
<td>DisiplinKerja</td>
<td>0.252</td>
<td>0.860</td>
<td>21.67%</td>
</tr>
</tbody>
</table>

In Table 7, it is found that the coefficient of determination for the Teacher Competency variable is greater than the other variables, namely 34.13%, indicating that Teacher Competence has a partial influence of 34.13%.

**REFERENCES**

25. Kintanar, FITZGERALD C., SUZETTE T. Elladora, and FRENAH R. Cuizon. "Plight of the parentsof the Filipino learners in the implementation of the