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THE INFLUENCE OF THE LEARNING ENVIRONMENT AND STUDENT LEARNING MOTIVATION ON STUDENT LEARNING OUTCOMES IN THE INFORMATICS SUBJECT CLASS VII AT SMPN 1 TANGGUNGGUNUNG

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***Abstract*—Informatics subjects are important to equip students with 21st-century skills. However, at SMPN 1 Tanggunggunung, learning is constrained by limited facilities, lack of teachers, and low student motivation. This has an impact on low learning outcomes. The two factors that are thought to be the most influential are the learning environment and motivation. This study aims to analyze the influence of these two factors in an effort to improve the quality of Informatics learning. This study uses a quantitative approach with multiple linear regression survey and analysis methods. The data collection technique was carried out through questionnaires and documentation of student scores, and analyzed using the help of the SPSS program. The results showed that both learning environment (t = 2.186; p = 0.033) and learning motivation (t = 2.240; p = 0.029) had a partial significant effect on Informatics learning outcomes. Simultaneously, both also had a significant effect (F = 15,519.025; p < 0.001), with a coefficient of determination (R^2) of 0.527. This means that 52.7% of the variation in learning outcomes is influenced by these two factors, while 47.3% is influenced by other factors. These findings underscore the importance of creating a learning environment that supports and builds student motivation in improving learning outcomes. The results of the t-test showed that the learning environment and learning motivation each had a significant effect on student learning outcomes. The F test also proved that both had a simultaneous effect. This means that a conducive learning atmosphere and high motivation play an important role in improving students' Informatics learning achievements.**

Keywords — Learning Environment, Learning Motivation, Learning Outcomes, Informatics, Junior High School

I. INTRODUCTION

Education is an important foundation in developing individual potential and the progress of the nation. In Law Number 20 of 2003, education is defined as a conscious and planned effort to create a learning atmosphere that encourages students to actively develop their potential. In the digital era, Informatics subjects play a strategic role in shaping the profile of Pancasila students through strengthening critical, creative, independent, and computational thinking skills. However, the implementation of Informatics learning still faces various obstacles, such as limited facilities, lack of teacher training, and low student participation. The learning environment, both physical and psychosocial, greatly determines the success of learning. A conducive environment is able to increase students' focus and motivation, while an unsupportive environment is an obstacle to material understanding.

In addition, motivation to learn is also a key factor in success, especially in subjects that require logic and analysis such as Informatics. Students with high motivation are more active and enthusiastic, while students who are less motivated tend to be passive and have difficulty understanding the material. Therefore, an interactive, relevant, and fun learning strategy is essential to build a passion for learning. At SMPN 1 Tanggunggunung, problems were found such as limited computer laboratories, lack of teachers, and low internet access. The average score of Informatics is also relatively low, which is 79.5, accompanied by low motivation to learn due to monotonous learning methods and the influence of social media. Based on these conditions, this study is focused on analyzing the influence of the learning environment and student motivation on the learning outcomes of Informatics class VII, as an effort to formulate concrete solutions to improve the quality of learning in the school.

II. LITERATURE REVIEW

A. Definition of Learning Outcomes

Learning outcomes are important indicators in assessing the effectiveness of learning and the level of students' understanding of the material provided. Bloom states that learning outcomes include cognitive, affective, and psychomotor domains, reflecting changes in knowledge,

attitudes, and skills [4]. Dimyati and Mudjiono emphasized that learning outcomes are the result of interaction between student activities and teacher teaching [5], while Purwanto stated that learning outcomes reflect students' mastery of subject matter [5]. The psychomotor aspect, according to Ashari, develops gradually and depends on previous learning [6].

Factors that affect learning outcomes are divided into internal and external [7]. Internal factors such as health, motivation, interests, and talents greatly affect students' enthusiasm and learning ability [8]. Meanwhile, external factors include family environment, school conditions, social interaction, and teacher teaching approaches [9]. Learning outcomes are not only measured through academic grades, but also through positive and sustained changes in behaviors, habits, and skills [10].

B. Definition of Learning Environment

The learning environment is an important external factor that includes physical, social, emotional, and cultural aspects. Schools as the main educational environment play a role in supporting the teaching and learning process optimally [11]. Sudjana (2010) stated that a conducive environment, both physically and socially, supports the comfort and learning outcomes of students. Ainy (2023) added that high motivation in a comfortable classroom, adequate lighting, and positive relationships between students and teachers, can maximize students' potential [12]. In addition, teachers need to associate the material with the surrounding environment as a contextual learning medium [13], as well as manage the classroom flexibly and technology-based to increase learning participation [14].

In the digital era, technology integration is an important part of the learning environment, but it still requires digital literacy and wise management [15]. The ideal learning environment not only supports the academic aspect, but also shapes the moral values and character of the students. Therefore, the role of teachers as facilitators who create a conducive and innovative learning atmosphere greatly determines the success of learning as a whole.

C. The Influence of the Learning Environment on Student Learning Outcomes

A comfortable learning environment includes physical conditions (layout, lighting, ventilation), positive social interactions, and psychological support, which have been shown to have a significant effect on students' motivation and academic achievement [16]. A neat and quiet classroom favors concentration, while a noisy environment lowers focus [17]. Teachers play a central role through classroom management, the use of technology, and professional training to increase learning participation [14]. At home, adequate study spaces and the active role of parents foster motivation, while a lack of facilities can hinder the spirit of learning. Key challenges such as limited funds and facilities demand synergy between the government, schools, and families [18]. A holistic learning environment not only encourages academic achievement, but also shapes students' character and mindset. Definition of Student Learning Motivation

Learning motivation is an internal and external drive that directs and sustains students' efforts in learning. McDonald mentioned that although it is not visible directly, motivation can be seen from learning behavior. Low motivation has a negative impact on academic achievement [19]. Zet Ena and Djami emphasized that motivation is influenced by psychological, social, and emotional factors, both intrinsic and extrinsic. Purwanto (2024) through the trident model highlights the importance of self-confidence, goals, and rewards. A supportive environment, active teachers, interactive approaches, and social support help encourage students' enthusiasm for learning [20].

Emotional factors play an important role in learning; Optimistic and enthusiastic students tend to be more focused, while stress inhibits concentration [21]. Interactive learning technology, appreciation, and active engagement have been shown to increase motivation and learning outcomes. Motivation is not just a momentary impulse, but a sustained engagement formed through a learning strategy that combines intrinsic, extrinsic, and supportive environmental factors.

D. The role of student learning motivation in student academic achievement

Various studies show that learning motivation has a significant effect on students' academic achievement. Putri and Darwan (2023) emphasize that the higher the motivation, the greater the chance of achieving achievement [22]. Motivation can come from within (family support, ideals, a pleasant learning environment) or from outside (appreciation and recognition) [23]. Nasution (2003) and Jaa et al. (2024) added that self-concept, emotional intelligence, and effective classroom management also strengthen motivation [24]. Therefore, a holistic approach that combines emotional support, a conducive learning environment, and self-regulation skills is essential to improve learning outcomes

E. The relationship between the learning environment, student motivation, and learning outcomes.

The learning environment and motivation are the two main factors that affect students' academic achievement. A conducive environment and strong motivation have been shown to increase participation and learning achievement (Mona & Yunita, 2021) [25]. Pratama and Ghofur (2021) also found a positive correlation between the quality of the learning environment, motivation, and student academic outcomes [26]. A physically and socially supportive environment provides a psychological drive to learn (Damanik, 2019) [27], while motivation acts as an important mediator that strengthens students' discipline and focus (Sartina, 2020) [28]. Hermawan et al. (2020) emphasized that the role of family, school, and community in an integrated manner greatly determines learning success [29]. Therefore, synergy between various elements needs to be realized in order to create an optimal and sustainable learning ecosystem.

III. RESEARCH METHODS

This research uses a quantitative method to analyze the influence of independent variables, namely learning environment (X1) and learning motivation (X2), on bound variables, namely student learning outcomes (Y). This study systematically presents information and summarizes data through a statistical approach.

A. Types and Research Designs

This study uses a quantitative approach to analyze the relationship between learning environment, motivation, and student learning outcomes objectively and measurably. Data was collected through a structured questionnaire, with random or stratified sampling techniques to ensure respondent representation. The analysis was carried out using descriptive statistics and multiple linear regression through SPSS to test the influence between variables simultaneously and partially. This study began with problem identification and literature review to develop a conceptual framework, followed by the preparation of instruments and data collection. Examples of relevant studies by Prawidia and Khusna (2021) show that the learning environment and motivation significantly affect students' mathematics learning outcomes [30]. The final results are used to draw conclusions and provide practical recommendations, and are reported in five systematic chapters.

B. Research Variables

This study examines two independent variables: learning environment and learning motivation and one dependent variable, namely student learning outcomes. The learning environment includes physical, social, and psychological aspects, while motivation comes from internal and external drives. These two factors are believed to have a major influence on students' academic achievement (Pratama & Ghofur, 2021) [26]. A conducive environment improves material comprehension (Harso & Seku, 2023), and learning motivation has been proven to be the main determinant of academic success (Teni & Yudiyanto, 2021) [19]. This study uses multiple linear regression to analyze the relationship of variables partially and simultaneously, as done by Prawidia & Khusna (2021) in their study [30]. The ultimate goal is to explain the influence of the two variables on learning outcomes and contribute to the development of more effective learning strategies.

C. Population, Sample, and Research Sampling

The population in this study is all grade VII students of Informatics at SMPN 1 Tanggunggunung, which is considered representative to examine the influence of learning environment and motivation on academic results. Creswell (2019) stated that the population includes individuals with characteristics according to the research objectives, and previous studies have shown that these two variables have a significant effect on learning outcomes (Harso & Seku, 2023; Teni & Yudiyanto, 2021) [19]. This study uses a total sampling technique, namely the entire population of 64 students is used as a sample because it is still possible in terms of time and resources. Although it was originally planned to only take students in grades VII E and VII F, the affordability of the number allows all students to be studied. This technique ensures that the data is more valid and the results can reflect the general conditions of SMPN 1 Tanggunggunung students.

D. Data Collection

Data collection is an important stage in research to obtain relevant, valid, and reliable data to support the achievement of study objectives. This study uses the survey method as the main approach with data collection techniques through questionnaires that are systematically compiled to extract information from respondents efficiently. In addition, structured observation was also applied to complement the questionnaire data, focusing on specific behaviors and situations using the observed instruments that had been designed. Data from both methods were analyzed quantitatively using the Likert scale, which measures the intensity of respondents' responses to statements from a score of 1 (strongly disagree) to 5 (strongly agree). This combinatorial approach allows researchers to get a more complete and accurate picture of the variables being studied, as well as increase the validity of the research results.

A. Data Analysis

The data analysis in this study aims to test the hypothesis and identify the relationship between learning environment variables, motivation, and student learning outcomes. Data obtained through questionnaires and observations were analyzed using statistics, in particular multiple linear regression, to ensure valid, reliable, and relevant results to the research objectives.

1. Test Instructions

The validity test in this study was carried out to ensure that the questionnaire instrument was able to measure the variables precisely. The test was carried out on 31 students in grade VII B SMPN 1 Tanggunggunung using Pearson Correlation through SPSS, with valid criteria if Sig. < 0.05 and r-count > r-table. In addition, Corrected Item-Total Correlation is used, where an item is considered valid if the value is > 0.30. The validity of the content is obtained through theoretical adjustment and expert consultation, while the validity of the construct is seen from the relationship of the item to its variables.

After validity, a reliability test is carried out using Cronbach's Alpha. The instrument is declared reliable if $\alpha \geq 0.70$, although a value of 0.60–0.69 is still tolerated. The test was carried out through SPSS by entering all items of each variable (learning environment, motivation, learning

outcomes). Both of these tests ensure that the instrument is feasible to use in further analysis.

2. Classic Assumption Test

In this study, a classical assumption test was carried out to ensure that the regression model met the requirements of statistical analysis and produced valid results. The test included five main aspects: normality (to test the residual distribution), homogeneity (similarity of variance between groups), multicollinearity (relationships between independent variables), heteroscedasticity (stability of residual variance), and linearity (linear relationships between variables). If all assumptions are met, the model is considered accurate and feasible as a basis for research decision-making.

The normality test in this study was used to determine whether the data of learning environment variables (X1), learning motivation (X2), and learning outcomes (Y) were normally distributed, as a requirement for linear regression analysis. The test is carried out using the Kolmogorov-Smirnov method via SPSS on the Analyze → Descriptive Statistics menu → Explore, by checking the options Normality plots with tests, Histogram, and Boxplot. The data is said to be normal if the Sig. value > 0.05 in the *Tests of Normality table*. Visual examination through histograms and Q-Q Plots is also used to support the results of statistical tests. If the data is abnormal, then data transformation or the use of non-parametric analysis is required. This test is important to ensure the selection of the right analysis method and the validity of the research results.

The homogeneity test was carried out with Levene's Test and showed a p-value of 0.2484 (> 0.05), indicating homogeneous data. The multicollinearity test using SPSS showed a Tolerance value of > 0.10 and VIF < 10, so that multicollinearity did not occur. Both of these tests ensure that the regression model is feasible to use.

The heteroscedasticity test ensured that the residual variance of the regression model remained constant so that the results were not biased; in this study, it was carried out on the variables of learning environment (X1) and learning motivation (X2) using the Glejser method via SPSS. The procedure: run the regression (Analyze → Regression → Linear), save *the Unstandardized Residuals*, and then create a residual scatterplot versus each independent variable. Randomly scattered point plots without patterns indicate no heteroscedasticity, whereas narrowing/widening patterns indicate residual variance is not constant and requires handling (log transformation, Weighted Least Squares, or robust regression). This test is crucial to ensure the validity and accuracy of multiple linear regression estimates.

The linearity test aims to ensure that the relationship between the free variable (learning environment/X1 and learning motivation/X2) and the bound variable (student learning outcomes/Y) is linear, so that multiple linear regression can be used validly. In this study, the test was carried out using *Deviation from Linearity* in SPSS through the Analyze → Compare Means → Means menu. If the Sig. value of *Linearity* < 0.05, then the relationship is declared linear; if > 0.05, then it is not linear and requires data transformation or other regression methods. This test can also be seen through a scatterplot: if the pattern is close to a straight line, the relationship is considered linear.

3. Simple and Multiple Linear Regression

Simple linear regression is used to test the influence of one independent variable on one dependent variable through the t-test, with the model Y = a + bX + e. If the Sig. value < 0.05, then the influence is significant. This study examines the influence of learning environment and learning motivation separately on student learning outcomes.

Multiple linear regression was used to analyze the influence of learning environment (X1) and learning motivation (X2) on student learning outcomes (Y), both partially and simultaneously. The analysis was carried out through SPSS. The results were reviewed from the R^2 value (predictive strength), Sig. ANOVA (< 0.05 means simultaneously significant), and Sig. Coefficients (< 0.05 showing a significant influence of each variable partially).

IV RESULTS AND DISCUSSION

A. Presentation of data and research results

This study aims to determine the influence of learning environment and learning motivation on student learning outcomes. The study was conducted at SMPN 1 Tanggunggunung, Tulungagung Regency, with a sample of 64 grade VII students who were randomly selected. Data was collected through a closed questionnaire and documentation of daily test scores for Informatics subjects. Learning environment variables include the physical condition of the space, facilities, social relationships, and family support, while learning motivation includes interest, perseverance, purpose, and self-perception. The questionnaire was distributed online and has been tested for validity and reliability. Data analysis was carried out quantitatively using SPSS, through simple and multiple regression tests. The results of the research are expected to be an important basis for schools and parents in creating a supportive learning environment and fostering student motivation to improve academic achievement.

B. Data Analysis and Hypothesis Testing.

1. Classic Assumptions

- The Normality Test yielded a residual significance value of 0.061, while the alpha value (α) was set at 0.05. Given that the significance value exceeds 0.05 (0.061 > 0.05), it can be concluded that the data has a normal distribution.
- The homogeneity test showed that the significance of X1 was 0.907 and X2 was 0.094, while alpha was 0.05. Given that the significance values of X1 and X2 both exceed 0.05 (i.e. 0.907 > 0.05 and 0.094 > 0.05), the data is considered to have uniform variance.
- The multicoloniality test produced that both variables had a tolerance value of > 0.10 and VIF < 10, so it can be concluded that there is no multicollinearity between independent variables.

- Based on the results of the heteroscedasticity test, the significance value for the X1 variable was 0.596 and X2 was 0.672, both of which were more than 0.05. This shows that independent variables have no significant effect on the residual absolute value. In addition, the results of the ANOVA test showed a significance of 0.479 (> 0.05), which indicated that the regression model did not experience heteroscedasticity. Thus, the regression model meets the assumption of homogeneity and is feasible to use for further analysis.
- The linearity test between the variables X1 and Y was performed using ANOVA on the SPSS output, with the criterion that the significance value on the line "Deviation from Linearity" must be more than 0.05 for the relationship to be declared linear. The test results show that the relationship between X1 and Y meets these criteria. Meanwhile, the linearity test between X2 and Y yielded a significance value of 0.290 for linearity and 0.958 for deviation from linearity, both of which exceeded 0.05. This shows that there is a linear relationship between X2 and Y. Thus, it can be concluded that the two independent variables (X1 and X2) meet the linearity assumption, so that the analysis can be continued to the multiple linear regression stage.

2. Hypothesis Test

Based on the results of simple linear regression, the learning environment variable (X1) had a significant influence on learning outcomes (Y), with a t-count value of 2.186 and a significance of 0.033 which was below the significance level of 0.05. Therefore, H_0 is rejected and H_1 is accepted, which means the learning environment plays a real role in influencing student learning outcomes. Meanwhile, learning motivation (X2) also showed a significant influence on learning outcomes, shown by a t-count of 2.240 and a significance value of 0.029 (< 0.05). Thus, an alternative hypothesis is accepted and it can be concluded that learning motivation also affects students' academic achievement.

Based on the F test, F was obtained as a calculation of 15,519.025 with a significance value of < 0.001. Since the calculated F far exceeds the F of the table by 3.145 at a significance level of 0.05 and the significance value is below 0.05, H_0 is rejected and H_3 is accepted. This shows that learning environment (X_1) and learning motivation (X_2) simultaneously have a significant effect on learning outcomes (Y). Thus, the two independent variables together make a real contribution to changes in student learning outcomes.

C. Discussion

The results of the study show that the learning environment has a significant influence on student learning outcomes in Informatics subjects, as shown by the results of the t-test with a significance value of 0.033 (< 0.05). This indicates that the more conducive the learning environment—both from physical, social, and psychological aspects—the better the students' academic achievements. A comfortable and supportive environment encourages focus, enthusiasm, and active involvement in the learning process. In addition, learning motivation has also been shown to have a significant influence on learning outcomes, with a significance value of 0.029 (< 0.05). Students who are highly motivated tend to be more enterprising, resistant to challenges, and have clear learning goals, which ultimately positively impact their achievement. Simultaneously, the results of the F test showed that the learning environment and learning motivation together significantly affected student learning outcomes, with a calculated F value that exceeded the F of the table and a significance value < 0.05. The value of the determination coefficient of 0.527 indicates that 52.7% of the variation in learning outcomes is influenced by these two factors. These findings confirm that students' academic success is greatly influenced by a supportive learning environment and high learning motivation, so it is important for teachers and schools to design learning strategies that pay attention to these two aspects in a balanced and integrated manner.

CONCLUSION

Based on the results of research at SMPN 1 Tanggunggunung on grade VII students in the subject of Informatics, it can be concluded that:

1. The learning environment has a significant effect on student learning outcomes. A comfortable, conducive, and supportive environment can improve academic focus and achievement.
2. Learning motivation also has a significant effect on learning outcomes. Students who have internal passion and drive tend to be more active, diligent, and achieve better results.
3. Together, the learning environment and motivation have a positive impact on learning outcomes. The combination of the two is a key factor in supporting students' academic success.

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