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The Effect of Google Classroom Media Utilization in Physics Learning on Students' Interest and Learning Outcomes at SMA Negeri 9 Kendari

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Abstract

This study aims to determine the effect of Google Classroom media utilization in learning Physics on students' interest and learning outcomes at SMA Negeri 9 Kendari. The method used in this research is an ex post facto survey with a quantitative approach. The data analysis technique used is path analysis with the help of Smart-PLS software at α = 5%. Based on the study results, it is concluded that the utilization of Google Classroom is classified in the excellent category with a percentage figure of 69.59%. Learning interest is organized in a strong class with a percentage rate of 75.55%. Learning outcomes are classified in the moderate category with an average acquisition value of 73.62 and a percentage rate of 100% of students meeting the minimum completeness criteria (KKM). Google Classroom utilization (X) significantly affects learning interest (Y1) by 0.559. Google Classroom utilization can explain/contribute to students' physics learning outcomes by 13%. Google Classroom utilization (X) has a significant indirect effect on learning outcomes (Y2) through learning interest (Y2) of 0.240. Google Classroom utilization can explain/contribute to students' physics learning outcomes.

INTRODUCTION

It has been two years since the covid-19 pandemic hit the world, and Indonesia is no exception. Almost all sectors of life feel the impact of the pandemic. Not only in the health sector, the Covid-19 Pandemic has also penetrated other aspects of Indonesia, including the world of education. With the new policy in carrying out activities implemented by the Indonesian government during the Covid-19 pandemic, of course, learning was changed by the Indonesian Minister of Education and Culture, Nadiem Anwar Makarim, namely with a distance learning system or often called (PJJ) which is carried out in the network. [1].

With the distance learning policy set by the government, teachers and schools must be more creative in developing and finding new alternatives to replace offline face-to-face learning that should be carried out at school. The interaction between teachers and students must continue, which will change the interaction model from offline to online. The media and technology used should not be too burdensome for students in their operational costs but still be a medium that can connect educators and students so that learning continues to run normally, not dull and undoubtedly efficient. One form of development of information technology used in education is Google Classroom.

Google Classroom is an innovative software product from a well-known technology company, Google, which has made a substantial contribution to changing the learning process in the world of education, where the learning process is no longer just listening to the description of the material from the teacher. Still, students also do other activities such as observing, demonstrating, doing, and others. Materials from teaching materials can be displayed in various forms and formats that are more active and interactive so that learners will be motivated to be further involved in the learning process. The development of internet-based learning media can be used as an innovation in physics learning activities in the classroom. Based on the results of research conducted by Azhar [1]. Said that a virtual learning environment means that internet media can make learning conducive because online learning exists and emerges to increase students' self-awareness and motivate them to learn more independently, and then can improve their desired learning outcomes [1].

Based on observations made at SMA Negeri 9 Kendari, students during the Covid-19 pandemic experienced a vast change in the learning process and learning outcomes they had previously experienced. Learning that is carried out online raises several problems. Especially during the early days of the pandemic, students had to be able to adjust quickly to distance learning. Then Google Classroom media comes as a form of endeavour from educators who are the answer to the challenges that plague the world of education today. Google Classroom can simplify the work of teachers as instructors to create classes, distribute assignments, and send feedback, and make it easier for students to stay connected with their teachers during learning from home by accessing all learning instructions from teachers through Google Classroom. So that researchers want to know students' responses to the tendency to retain interest in Physics subjects during the use of Google Classroom media, which also has implications for learning outcomes.

This research seeks to understand and examine students' perceptions of the influence of using Google Classroom as an application that already exists and is used as a medium of interaction between teachers and students in limited face-to-face learning at SMA Negeri 9 Kendari during the Covid-19 pandemic. In addition, this research will focus on Physics, which will further identify whether Google Classroom can become an optimal learning resource to increase learning interest and learning outcomes in Physics or vice versa so that the teacher's role as a facilitator can be implemented.

This research is vital as a reference material for the future development and utilization of Google Classroom as an appropriate, effective, innovative learning media that can be used in learning Physics and increase students' interest and learning outcomes. With this research, it is hoped that schools will be able to design and develop the latest innovations in learning. Teachers can be more careful to anticipate and create fun learning and become an evaluation for students to increase their interest and learning outcomes in Physics subjects.

RESEARCH METHODS

This research is categorized as ex post facto research using survey methods to obtain and collect data [2,3]. This research was conducted in the odd semester of the 2021/2022 academic year, starting from November 19, 2021, to January 3, 2022, at SMA Negeri 9 Kendari. The reason why researchers conducted research at this school is that there has been no research that examines the use of Google Classroom media, and also, the school does use this media in interacting with students during learning.

The population in this study were all students who were active in learning Physics in class X MIPA SMAN 9 Kendari, which amounted to 110 students spread over five courses, with details in Table 1.

Table 1. Distribution of Students in Class X MIPA SMA Negeri 9 Kendari

Class	Total number of students
X MIPA 1	27
X MIPA 2	15
X MIPA 3	26
X MIPA 4	24
X MIPA 5	18
Population Count	110

Source: Class X Odd Semester Distribution List for the 2021/2022 Academic Year

The sample in this study was taken from all classes by calculating the sample size of 110 students, then using the Isaac and Michael sample size determination table from a particular population with an error rate of 5%; the sample size of this study was 84 students [3]. The research sample was taken with a simple random sampling technique because the characteristics of the research population were homogeneous, with details in Table 2.

Table 2. Research Sample Distribution

Class	Total number of students
X MIPA 1	20
X MIPA 2	10
X MIPA 3	22
X MIPA 4	19
X MIPA 5	13
Sample Quantity	84

The instrument used is a validated questionnaire. Each item of the question/statement is a formulation of the objectives to obtain information about the relevant variables in this study, namely the utilization of Google Classroom learning media and students' learning interests. While the data on the physics learning outcomes of students is obtained from the documentation of the subject teacher's assessment which will be compared with the KKM of the standards set by the school and categorized into the limits of the learning outcome criteria that apply at SMA Negeri 9 Kendari, so that the percentage of student learning outcomes is successful or not seen based on these indicators, the reference criteria for the Google Classroom media utilization score and students' learning interests and learning outcomes can be seen in Table 3, Table 4, and Table 5 [4,5].

Table 3. Category Determination of Google Classroom Media Utilization

Interval	Category
81%-100%	Excellent
61%-80%	Good
41%-60%	Fairly Good
21%-40%	No Good
0%-20%	Very unfavourable

Table 4. Determination of Learner Interest Category

Interval	Category
81%-100%	Very Powerful
61%-80%	Powerful
41%-60%	Quite Strong
21%-40%	Weakness
0%-20%	Extremely Weak

Table 5. Learner Learning Outcome Criteria Limitation

Interval	Category
91%-100%	Extremely High
82%-90%	High
73%-81%	Moderate
<73%	Low

Source: Limitation of Learning Outcome Criteria SMA Negeri 9 Kendari

While determining the tendency of student learning outcomes, variables are classified using the Minimum Completeness Criteria (KKM) references in Table 6 [6].

Table 6. Tendency of Learners' Learning Outcomes

Interval	Frequency	Percentage (%)	Description
Learning Outcomes < 73	n < 73	$\frac{f_{<73}}{n_{total}} \times 100\%$	Incomplete

Interval	Frequency	Percentage (%)	Description
Learning Outcomes ≥ 73	n ≥ 73	$\frac{f_{\geq 73}}{n_{total}} \times 100\%$	Completed

The description of Google Classroom utilization, learning interest, and learning outcomes is explained based on data processing using descriptive statistical analysis through the descriptive statistics data analysis feature on the Microsoft Excel data toolbar menu, which is presented in the form of tables, graphs, diagrams, histograms to get an organized, concise, and clear picture of the research variables [7]. While testing the research hypothesis using inferential statistics with path analysis techniques can explain the effect of the independent variable on the dependent variable directly through the mediating variable [8].

In this study, the research design model used is a double paradigm with two dependent variables. The conceptual model of this research has been clearly illustrated in the framework of thinking in Figure 1.

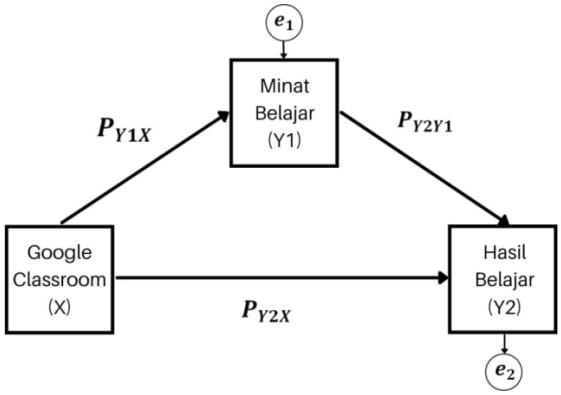

Figure 1. Path Diagram Model of the Relationship between X and Y Variables

To find the relationship between X with Y1, and X with Y2, a simple correlation technique is used in path analysis between Y1 and Y2. To find the relationship between X with Y1, and X with Y2, a simple correlation technique is used in path analysis between Y1 and Y2. Path analysis is used to see if there is an influence between the independent variables (X) and each dependent variable (Y) by looking at the relationship between X and Y2 $T_{Statistics}$ (|o/STDEV|) in Smart-PLS output. Furthermore, to find out how much influence between exogenous and endogenous variables in this study can be seen from the coefficient of determination through quality criteria through the R Square table in Smart-PLS output. Evaluation of the goodness of the path analysis model is known through the Normed-fit index (NFI) value, where the NFI≥90 value indicates a good fit [9].

RESULTS AND DISCUSSION

A. Description of Data on Google Classroom Utilization

Google Classroom media utilization data was obtained through a research questionnaire consisting of 28 items in the form of questions/statements using a Likert scale with 4 answer options. The highest score for each question or comment is 4, and the lowest is 1. Then the descriptive data analysis of Google Classroom media utilization variables can be presented in Table 7.

Table 7. Description of Data on Google Classroom Utilization

Statistics	Value
Range	46
Minimum	54
Max	100
Mean	77,944
Median	75,893
Modus	75,893
Variance	11,629
Standard Deviation	10,784

Source: Microsoft Excel Descriptive Statistics Output

The processing results of the Google Classroom utilization questionnaire are presented visually, as shown in Figure 2.

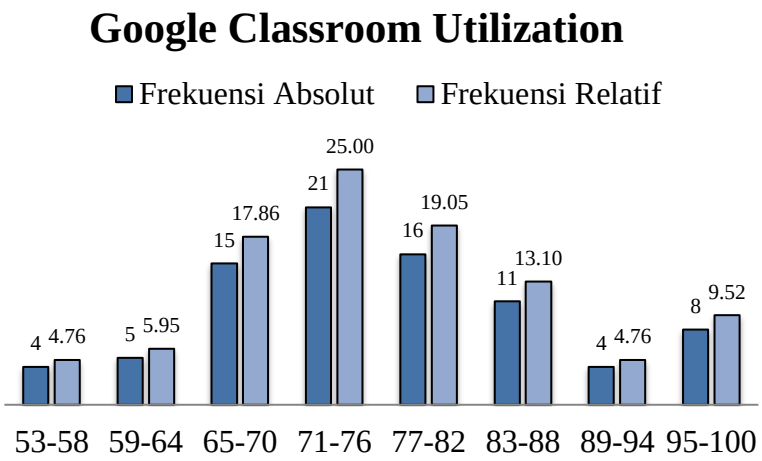

Figure 2. Google Classroom Utilization Histogram

So by looking at the statistical data in Table 7, the average percentage number of Google Classroom utilization is 77.94%, then translated into qualitative sentences based on Table 3 that the utilization of Google Classroom learning media at SMA Negeri 9 Kendari is classified into the excellent category.

B. Description of Learning Interest Data

Data on students' interest in learning was obtained through a research questionnaire comprising 25 questions/statements using a Likert scale with 4 answer options. The highest score for each question or comment is 4, and the lowest is 1. Then the descriptive data analysis of the student learning interest variable can be presented in Table 8.

Table 8. Learning Interest Data Description

Statistics	Value
Range	44
Minimum	53
Max	97
Mean	75,548
Median	73,5
Modus	69
Variance	101,142
Standard Deviation	10,057

Source: *Output Descriptive Statistics Microsoft Excel*

The data processing results for the student learning interest questionnaire are presented as shown in Figure 3.

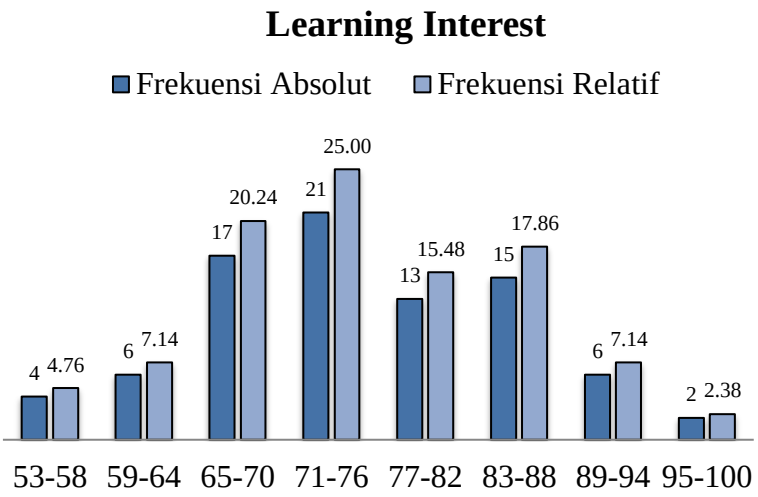

Figure 3. Learning Interest Histogram

So by looking at the statistical data in Table 8, the average percentage of interest in learning is 75.55%, then translated into qualitative sentences based on Table 4 that students' interest in learning in SMA Negeri 9 Kendari is classified into a strong category.

C. Description of Learning Outcome Data

Learning outcome data is obtained through documentation of teacher assessment results already in the form of a complete assessment. Then the descriptive data analysis of the learning outcome variables of 84 students who became the sample can be presented in summary Table 9.

Table 9. Learning Outcomes Data Description

Statistics	Value
Range	3
Minimum	73
Max	76
Mean	73,619
Median	73
Modus	73
Variance	0,865
Standard Deviation	0,930

Source: *Output Descriptive Statistics Microsoft Excel*

The data processing results of the learning interest questionnaire obtained are presented as shown in Figure 4.

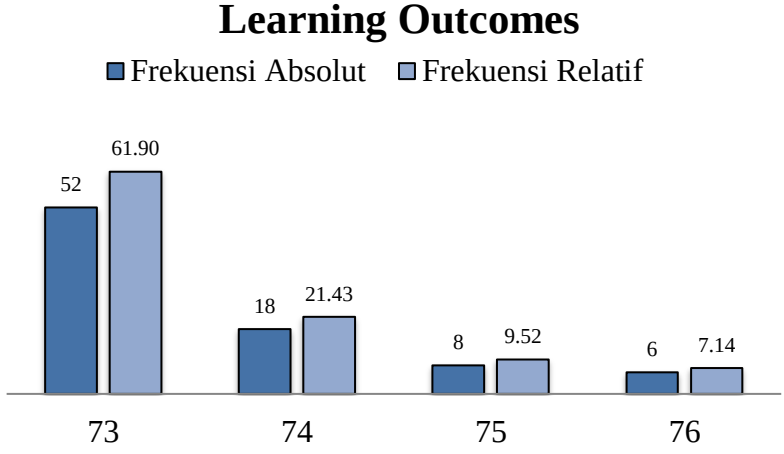

Figure 4. Learning Outcome Histogram

As for determining the tendency of students' learning outcomes will be classified using the KKM (Minimum Completeness Criteria) reference, which is used as a standard for achieving competence at SMA Negeri 9 Kendari, with a KKM value of 73. Table 10 presents data on student learning outcomes classified according to competency limit criteria using the KKM value at SMA Negeri 9 Kendari.

Table 10. Tendency of Learners' Learning Outcomes

Interval	Frequency	Percentage (%)	Description
Learning Outcomes < 73	0	0%	Incomplete
Learning Outcomes ≥ 73	84	100%	Completed

Source: Data of Students' Report Card Values

Then to describe the physics learning outcomes of students, based on several populations sampled in this study, namely 84 students spread from X MIPA 1 to X MIPA 5 obtained Physics subject report cards with a score range of 73-76 with an average of 73.62. All students sampled have achieved the completeness of learning outcomes from the standard set by the school, namely the KKM of 73. So that the success of students' learning outcomes in learning Physics in class X MIPA SMA Negeri 9 Kendari during the odd semester of 2021/2022 is included in the moderate category; this is because the percentage frequency of the limit of students' learning outcomes criteria is in the interval 73%-81%. So the percentage of students who score ≥73 shows perfect results, namely 100%.

D. Inferential Statistics with Path Analysis

1. Path Analysis Parameter Estimation

The software used in this research is the Partial Least Square (PLS) application program. The logical consequence of using PLS is that testing can be done without a solid theoretical basis, ignoring some assumptions (non-parametric), and the accuracy parameter of the prediction model is seen from the coefficient of determination (R^2). In addition, the recommended sample size in using this software is 30-100 cases; this is relevant to the sample size in this study, which is 84. Figure 5 is a summary of the data processing.

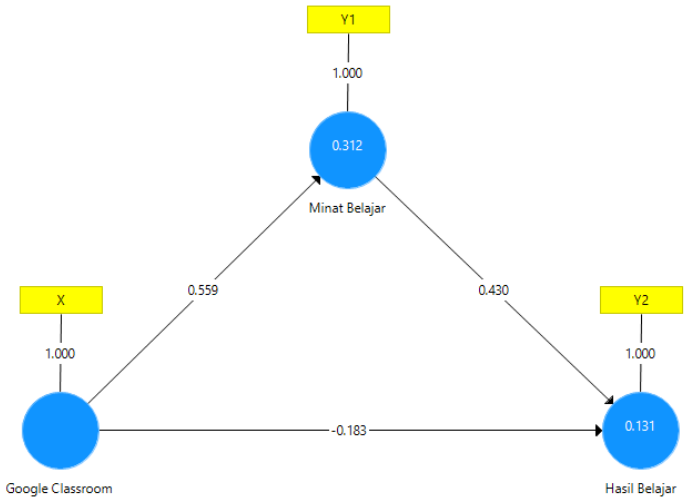

Figure 5. Path Diagram and Path Coefficient Value

Based on Figure 5, it can be seen that the path coefficient value of Google Classroom utilization (X) on learning interest (Y1) is 0.559; this shows that the relationship between Google Classroom utilization (X) and learning interest (Y1) is positive, meaning that the higher the utilization of Google Classroom in students, the higher the learning interest possessed by students. Then the Google Classroom utilization variable (X) on learning outcomes (Y2) has a path coefficient value of -0.183; this shows that the relationship between Google Classroom utilization (X) on learning outcomes (Y2) is negative, which means that if learning utilizes Google Classroom, the learning outcomes of students become low. Then the effect of learning interest (Y1) on learning outcomes (Y2) has a path coefficient

value of 0.430; this shows that the relationship of learning interest (Y1) to learning outcomes (Y2) is positive, which means that the higher the student's interest in education, the higher the learning outcomes.

In addition, Table 11 shows how much endogenous (dependent) variables contribute to explaining exogenous (independent) variables.

Table 11. Path Coefficient and R^2

Variable Relation	Path Coefficient	R^2
Google Classroom → Learning Interests	0,559	31%
Google Classroom → Learning Outcomes	-0,183	13%
Learning Interest → Learning Outcomes	0,430	

Source: *Output Smart-PLS 3*

Table 11 shows that the Google Classroom utilization variable can explain/contribute 31% in influencing the learning interest variable while the remaining 69% is explained or controlled by other variables outside the variables studied. Then, the Google Classroom utilization variable can also explain/contribute 13% in influencing learning outcomes, while the remaining 87% is explained or controlled by other variables outside the variables studied.

Many variables can affect students' interests and learning outcomes. Other factors outside the study, such as individual intelligence, goals and passions, lessons, teacher attitudes, teacher teaching models and strategies, school facilities, family support, socializing friends, and the environment, may be able to influence students' interests and learning outcomes. And many other factors can affect those that come from internal and external students [10,11].

2. Parameter Testing of Direct and Indirect Effects

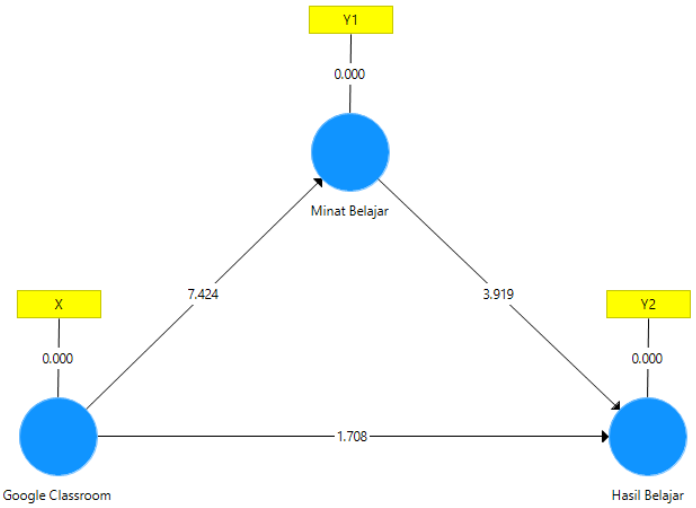

Figure 6. Path Diagram and T_{Count} Values

Table 12. Path Coefficient Value, T_{count} Significance of Direct and Indirect Influence Path (α = 5%), and NFI Value

Variable Relationship	Path Coefficient	Effect (T_{count})		T_{table}	P-value	NFI (*Model Saturated*)
		Direct	Indirect			
Google Classroom → Learning Outcomes	-0,183	1,708		1,989	0,008	
Google Classroom → Learning Interest	0,559	7,424		1,989	0,000	1,00
Learning Interest → Learning Outcomes	0,430	3,919		1,989	0,000	

Variable Relationship	Path Coefficient	Effect (T_{count})		T_{table}	P-value	NFI (*Model Saturated*)
		Direct	Indirect			
Google Classroom → Learning Interest → Learning Outcomes	0,240		3,244	1,989	0,001	

Source: *Output Smart-PLS 3*

Based on the research data processing in Table 12 using Smart-PLS statistical software, the first relationship is using Google Classroom with learning interest. The result shows that the amount of $T_{count} > T_{table} = 7.424 > 1.989$ or $P_{values} = 0.000 < 0.05$ at $\alpha = 5\%$, which means that the utilization of Google Classroom has a positive and significant effect on students' interest in learning at SMA Negeri 9 Kendari. Google Classroom can encourage students' interest in learning because, when viewed in terms of time effectiveness, this media is a learning media that is freely accessible at any time. The data also support that the time effectiveness indicator contributed 8.9% or 89% of the total distribution. In addition, at SMA Negeri 9 Kendari, teachers can manage the class and operate Google Classroom well. The students also admit they need Google Classroom in limited face-to-face learning during the pandemic. Google Classroom media has succeeded in providing ease of communication and interaction flexibility so that students can understand and understand how to operate Google Classroom and more efficiently collect assignments through Google Classroom.

This study's results align with previous studies conducted by Rendika Valery et al. (2020), suggesting that there is an influence of student perceptions of Google Classroom online learning on learning interest. Ajeng Radyati (2020) also concluded that there is an effect of student perceptions of Google Classroom e-learning on learning interest. According to Sri Arum and Yoga Budi Bhakti (2020) that student interest in learning is in the "strong" category because 63.9% of students agree to use the Google Classroom application as a learning medium. During this pandemic, teachers must be able to be creative so that students do not feel bored when studying at home, and the Google Classroom application makes it easier for users because it can be accessed using computers, laptops, tablets, and smartphones [12,13,14].

The second relationship, namely the learning interest variable with learning outcomes, the learning interest variable has a positive and significant effect on the physics learning outcomes of students at SMA Negeri 9 Kendari. The results showed that the magnitude of $T_{count} > T_{table} = 3.919 > 1.989$ or $P_{values} = 0.000 < 0.05$ at $\alpha = 5\%$. Learning interest can encourage students' learning outcomes because when viewed from the learning interest indicators that have been measured, it shows that students at SMA Negeri 9 Kendari feel happy when entering Physics learning through Google Classroom. They are characterized by students' activities in learning Physics while using Google Classroom. Before learning begins, learners prepare themselves, try to find references, and do the assignments well. Learners always focus on listening, taking notes, and not doing other things when the teacher explains Physics material in Google Classroom, even though it is pretty long. Students' interest in learning has successfully influenced their learning outcomes, meaning that the stronger their interest in education, the higher their learning outcomes.

Relevant to some previous research by Hazari Gustina (2020) on 58 fifth-grade students of SDN 68 Bengkulu City, who concluded that the learning interest variable significantly influenced the learning outcome variable by 83%. Siti Nurhasanah and A. Sobandi (2016) also stated that student learning outcomes could be improved by increasing student interest in learning, meaning that better student interest in education will impact student learning outcomes [15,16].

The third relationship is between Google Classroom utilization variables and learning outcomes. The utilization of Google Classroom has a negative association and has no significant effect on the physics learning outcomes of students at SMA Negeri 9 Kendari. The results showed that the magnitude of $T_{count} < T_{table} = 1.708 < 1.989$ or $P_{values} = 0.088 > 0.05$ at $\alpha = 5\%$. It can be seen that several previous studies corroborate the results of this study; for example, Nila Farida (2021) on students at SMA Negeri 11 Bengkulu City states that there is no effect of using the Google Classroom application on student learning outcomes with a percentage of 0.96% which can be categorized as "not good." Then the research results by M. Ainul Yaqin (2021) on 34 class XI IPS SMAN 4 Pasuruan

City students show no significant positive effect between the use of Google Classroom and Sociology learning achievement. In contrast, Kasih Lindung Sari (2021) revealed that the correlation between the use of Google Classroom and student math learning outcomes had a positive influence from the results of the calculation of T_{hitung} of 13.739 higher than the 5% T_{table} of 1.661 661 [17,18,19].

Many studies have examined the effect of Google Classroom media utilization on learning outcomes. Few of them recognize that Google Classroom is a very effective learning media and is suitable for use during a pandemic; it may still be used to support offline learning as usual. However, Google Classroom is ineffective if not using the correct method. As conducted by Edo Arruji (2020) shows that students look more active when learning using Google Classroom because it emphasizes students to express ideas, express their opinions, and explore materials or articles on the internet to answer questions during the discussion process [20].

There is no direct effect of Google Classroom utilization on learning outcomes at SMA Negeri 9 Kendari when viewed from the lowest percentage of each indicator measured due to the quality of learning delivery. More specifically, it is because 1) students do not easily understand learning materials with meeting features using video conferencing. The data shows that out of 84 students, 4 never understand learning material using video conference features, 47 students sometimes understand, 16 students easily understand, and the remaining 17 always understand the material. It turns out that as many as 60.71% of students are still constrained in understanding physics material when learning is done through video conference meetings. 2) Learners feel that they are not free to communicate with teachers and friends if only through Google Classroom. The data shows that out of 84 learners, 5 never feel free to communicate with their teachers and friends if only through Google Classroom, 43 learners sometimes feel free, 18 learners feel free, and the remaining 18 always feel free. It turns out that 57.14% of learners are still constrained in communicating with teachers and friends, if only through Google Classroom.

However, suppose the two variables are connected, and the effect is seen through the intermediary of the learning interest variable. In that case, it can be seen that there is a positive and significant influence between the Google Classroom utilization variable on learning outcomes through student interest. The results showed that the amount of $T_{count} > T_{table} = 3.244 < 1.989$ or $P_{values} = 0.001 < 0.05$ at $\alpha = 5\%$. Indicates that the mediating variable of learning interest has provided a full function well in contributing to the influence of the utilization of Google Classroom on learning outcomes that were previously insignificant when tested directly.

In the learning process, students' interest in learning is significant in supporting and determining their achievement in learning outcomes. Especially during a pandemic like this, learning media and connecting media between teachers and students choose how students interest in the learning process. Therefore, students' interest in learning must be maintained and continuously improved with various supporting efforts, such as providing learning facilities by schools, providing easy internet access to students, and providing teaching that is packaged creatively by teachers with interactive models to maintain the enthusiasm of students in the face of online and limited learning during this covid-19 pandemic [21].

The results of this study describe the utilization of Google Classroom, learning interest and physics learning outcomes, where the three variables generally show a positive and significant influence and are interrelated. So that these variables support each other and encourage students' progress in the learning process. These results are also relevant to several previous studies on using Google Classroom in learning.

Conducive learning is expected by various parties so that the vision of education can be achieved optimally. So this is a joint task that requires the collaboration of all elements ranging from parents, educators, schools, and other supporters such as media, facilities, accessibility and so on to improve the quality of human resources in Indonesia.

3. Evaluation of Model Goodness Criteria

This evaluation is carried out to indicate whether the Goodness of Fit (GoF) in a path analysis model is good or not. Based on the research results in Table 12, it can be seen that the NFI value is 1.00 or 100%, which means that the overall path analysis model can explain the case of the effect of Google Classroom utilization on student interest in learning and learning outcomes at SMA Negeri 9

Kendari with a good category. This value meets the NFI≥0.90 criteria, so the model is declared a good fit.

CONCLUSION

Based on the results of the study, several points can be drawn into conclusions, namely the first, the description of the utilization of Google Classroom media in SMA Negeri 9 Kendari in terms of students' knowledge of Google Classroom, the quality of learning delivery, flexibility, ease of communication and interaction and time effectiveness in learning using Google Classroom is classified in the excellent category with a percentage of 69.59%. Students learning interest in SMA Negeri 9 Kendari during blended learning using Google Classroom in terms of feelings of pleasure and joy, students' attention, students' pride and satisfaction, students' interest, and students' involvement in learning show learning interest which is classified in a strong category with a percentage of 75.55%. The learning outcomes of students at SMA Negeri, 9 Kendari during blended learning using Google Classroom are included in the moderate category because the entire research sample of 84 students obtained an average score of 73.62 with a range of 73-76, which means that all students meet or are above the minimum completeness criteria of the standard set by the school which is 73. Google Classroom utilization (X) significantly affects learning interest (Y1) by 0.559. Google Classroom utilization can explain/contribute to students' physics learning outcomes by 13%. Learning interest can justify/contribute to students' physics learning outcomes by 13%. Google Classroom utilization (X) has a significant indirect effect on learning outcomes (Y2) through learning interest (Y2) of 0.240. Google Classroom utilization can explain/contribute to students' physics learning outcomes. Future researchers should be able to explore more variables that can affect students' interest and learning outcomes, develop a broader scope of research, and deepen the use of Google Classroom from various positive impacts in the world of education.

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