



The Influence of Teacher Pedagogical Competence and Learning Facilities on Student Learning Outcomes in Economics Subjects

Yeni Wulandari¹, Bridget Uwameiye²

¹Faculty of Teacher Training and Education, Universitas Sebelas Maret, Jawa Tengah, Indonesia

²Economics Education, Ambrose Alli University, Ekpoma, Edo State, Nigeria

Article Info

Article history:

Received Oct 6, 2023

Revised Oct 18, 2023

Accepted Nov 15, 2023

Keywords:

Economics Subjects

Influence

Learning Facilities

Learning outcomes

Pedagogical Competence

ABSTRACT

Purpose of the study: The aim of this research is to determine the influence of teacher pedagogical competence and learning facilities on student learning outcomes in economics subjects.

Methodology: The research method used is a quantitative descriptive method. The population as subjects in this research were class XI students majoring in social sciences at high school. The sampling technique used in this research was proportional random sampling. The number of samples in this study was 127 respondents. The data collection techniques used were questionnaires and documentation. Data on pedagogical competence and student learning facilities were obtained from the results of distributing questionnaires with a Likert scale. The data analysis technique used is multiple linear regression.

Main Findings: Based on the research results, it can be concluded that there is a significant positive influence between pedagogical competence and learning facilities on learning outcomes ($F_{\text{calculated}} > F_{\text{table}}$ or $14.996 > 3.07$ at the 5% significance level) and the coefficient of determination is 19.5%. This means that the influence of pedagogical competence and learning facilities on student learning outcomes is 19.5%, while it is influenced by other factors at 80.5%.

Novelty/Originality of this study: The novelty of this research is that it strengthens the theory about the magnitude of the influence of teacher pedagogical competence and learning facilities in determining student learning outcomes.

This is an open access article under the [CC BY-NC](https://creativecommons.org/licenses/by-nc/4.0/) license



Corresponding Author:

Yeni Wulandari

Faculty of Teacher Training and Education, Universitas Sebelas Maret, Kentingan, Jl. Ir Sutami No.36, Kec. Jebres, Surakarta City, Center Java, Indonesia

Email: yeniwlnr765@gmail.com

1. INTRODUCTION

Education is one of the important human needs to support the success of a profession [1]–[3]. Education can also be the basis for determining the good and bad of a human person according to normative standards, so it is appropriate that education needs to be paid attention to, not only in the educational process but as a whole, both in terms of the quality of educators (teachers) or the quality of supporting facilities and infrastructure [4]–[6]. One way to improve the quality of education in Indonesia includes improving the quality of human resources and supporting facilities and infrastructure. The human resources in question are teachers, where teachers play a role in shaping student success and achievement [7], [8]. Although teachers are not the only determining factor in education, the learning process is the central point of education.

The teacher is the one who implements the learning process directly for students. So teachers play a very big role in the quality of education [9]–[11]. The government guarantees the quality of education by creating national education standards as outlined in Government Regulation No. 19 of 2005. One of the determinants of the quality of national education is the quality of a teacher. The quality of teachers is expected to have competence as professional educators who are able to produce great students as proof of the quality of their profession [12]. The teacher competencies referred to include pedagogical competence, personality competence, social competence and professional competence.

On average, teachers in high school are certified, but there are still teachers who do not teach optimally according to teacher competency requirements, so it is important for a teacher to develop his or her competency. Effective teaching methods in this era of globalization are supported by modern facilities and infrastructure, for example LCD is a learning facility which will certainly increase teacher teaching motivation. Learning facilities are learning facilities and infrastructure. Infrastructure includes school buildings, study rooms, sports fields, prayer rooms, arts rooms and sports equipment. Learning facilities include textbooks, reading books, school laboratory equipment and facilities as well as various other learning media.

The availability of learning facilities but not maximizing them properly by teachers and students will ultimately not have a positive influence on student learning outcomes. Increasingly modern and adequate learning facilities have created awareness of the need to increase teachers' abilities and thinking power. Starting from these abilities and thinking power, Law No. 14 of 2005 article 8 states that teachers are required to have academic qualifications, competence, educator certification, be physically and spiritually healthy and have the ability to realize national education goals. The competencies in question include pedagogical competencies, personality competencies, social competencies and professional competencies. Based on this opinion, researchers focus more on the issue of teacher competence on pedagogical competence only because pedagogical competence can also be assessed by students because it is directly related to student learning, namely the way teachers manage learning.

It is important for a teacher to master the learning facilities provided by the school. Teachers who cannot make maximum use of learning facilities will result in boring learning activities [13]. Students tend to lack motivation to learn. Therefore, learning facilities supported by good teacher pedagogical competence will support good student learning outcomes as well. Good and bad learning outcomes are influenced by several factors, one of which is that teachers and available learning facilities are still not optimal [14]. Therefore, teachers need to develop pedagogical competence, namely by mastering teaching methods and facilities at school so that students are more enthusiastic about learning, which will also improve their learning outcomes.

This research is in line with research conducted by Setiadi & Setiani [15] which states that there is a positive influence of teacher pedagogical competence and learning facilities on economic learning achievement. The difference between this research and research conducted by researchers lies in the variables used. The novelty of this research is that it strengthens the theory regarding the magnitude of the influence of teacher pedagogical competence and learning facilities in determining student learning outcomes.

The urgency of this research is that education is the main driver of societal progress, and the quality of education is directly related to the effectiveness of the teaching and learning process. Understanding the factors that influence student outcomes in economics courses is critical to improving the overall quality of education and preparing students for future challenges in economics. The aim of this research is to determine the influence of teacher pedagogical competence and learning facilities on student learning outcomes in economics subjects.

2. RESEARCH METHOD

2.1. Research Type

This research uses descriptive research methods using quantitative analysis. Quantitative research is used to examine certain populations and samples, data collection is carried out using research instruments, statistical or numerical data analysis, which aims to test existing hypotheses [16]–[18]. This research will test the truth of the hypothesis carried out through data collection in the field, using descriptive quantitative research methods. The aim is to determine the influence of Teacher pedagogical Competence and Learning Facilities on Student Learning Achievement in Economics Subjects.

2.2. Population and Sample

The population is all individuals who are the subject of discussion in research [19]–[21]. The population in this study were all class XI students majoring in social sciences at high schools, totaling 192 students. The sample is a portion of the population that is the object of research that represents and explains the condition of the population [22]–[24]. The sample in this study was 127 class XI students majoring in social sciences at high school.

2.3. Data Collection Technique

Data collection is the methods used to obtain the necessary data using a tool. In this research the researcher used a questionnaire method and documentation method. The data collection technique using a questionnaire is data collection that is used to investigate a problem by circulating a list of questions to respondents to obtain information, information, responses or things that are known in writing. The author used the questionnaire method as a data collection tool to determine teacher pedagogical competence and learning facilities on the learning outcomes of class XI students majoring in social sciences in high school. The questionnaire in this study was prepared in the form of a statement sentence and students were asked to provide a checklist (√) on the choices that were available.

2.4. Data Analysis Technique

Data analysis is an activity after data from all respondents or other data sources has been collected. The analysis technique in quantitative research is using statistics. Descriptive analysis technique is a type of data analysis that is intended to reveal or describe the situation or characteristics of each research variable [25], [26]. The data analysis techniques used in this research are multiple linear regression analysis techniques, F test, T test, and coefficient of determination. However, before testing the hypothesis, the analysis prerequisite tests are carried out, namely by carrying out normality tests, linearity tests and heteroscedasticity tests.

3. RESULTS AND DISCUSSION

Before hypothesis testing is carried out, the data used for statistical analysis using multiple regression techniques must meet several requirements, namely the normality test, linearity test, multicollinearity test and heteroscedasticity test. Normality is used to determine whether the data to be analyzed is in the form of a normal distribution or not. In this research, it was found that the regression model met the normality assumption.

The linearity test aims to find out whether two variables have a linear relationship or not [27]. The results of the linearity test show that the significance of the deviation from linearity of the pedagogical competency variable and the learning facility variable is 0.122 and 0.306 respectively because the significance is > 0.05 so it can be concluded that H_0 is accepted, which means that the regression model is linear.

Multicollinearity is the condition of the existence of a perfect or near perfect linear relationship between independent variables in a regression model. The results of the multicollinearity test show that the tolerance value of the two independent variables is more than 0.1 and the VIF is less than 10. So, it can be concluded that the regression model does not have multicollinearity.

Heteroscedasticity is used to determine whether the confounding variables in the regression equation have the same variance or not. Based on the heteroscedasticity test, it is known that the regression model indicates that there is a heteroscedasticity problem. It is known that the regression model indicates that there is no serious heteroscedasticity problem. In other words, in this model, the residual variance from one observation to another is constant, or homoscedasticity. These findings show that the regression model is suitable for predicting learning outcome variables based on pedagogical competency and learning facility variables.

Hypothesis testing is a step to prove the statements put forward in the formulation of the hypothesis. A hypothesis will be accepted if the data collected can support the hypothesis statement and vice versa will be rejected if it does not support it. The results of the multiple regression analysis can be seen in the table below.

Table 1. Multiple Regression Test Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	73,777	1,245		59,264	,000		
Pedagogical Ability	,035	,013	,235	2,700	,008	,855	1,170
Learning Facilities	,081	,024	,294	3,375	,001	,855	1,170

Based on the table above, the multiple linear regression equation is as follows:

$$Y = 73,777 + 0,035X_1 + 0,081X_2$$

The constant of 73.777 states that if there is no teacher pedagogical competence or learning facilities then the magnitude of student learning outcomes is 73.777. The regression coefficient (X1) 0.035 states that every time there is an increase in one unit of teacher pedagogical competence, it will increase student learning outcomes by (X1) 0.035. The regression coefficient (X2) 0.081 states that every time there is an increase in one unit of learning facilities, it will increase student learning outcomes by (X1) 0.081.

The t test is used to partially test each variable. The T test results are shown in the table below.

Table 2. T Test Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	73,777	1,245		59,264	,000
Entrepreneurship Learning	,035	,013	,235	2,700	,008
Career Guidance Learning	,081	,024	,294	3,375	,001

Based on the coefficient table above, it can be seen that the probability value of teacher pedagogical competence (X1) is 0.008. This probability value is smaller than 0.05 and the calculated t is greater than the t table (2,700 > 1,9794). The t distribution table is searched at $\alpha = 0.05$ with df 124 (n-k-1 or 127-2-1), then H_0 is rejected, so there is a partially significant influence between the pedagogical competency variable (X1) on the student learning outcome variable (Y).

The probability value of learning facilities (X2) is 0.001. This probability value is smaller than 0.05 and the calculated t is greater than the t table (3.375 > 1.9794). The t distribution table is searched at $\alpha = 0.05$ with df 124 (n-k-1 or 127-2-1), then H_0 is rejected, so there is a partially significant influence between the pedagogical competency variable (X1) on the student learning outcome variable (Y).

The F test is used to determine whether the independent variables together have a significant influence on the dependent variable. The F test results can be observed in the table below.

Table 3. F Test Results

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	34,118	2	17,059	14,996	,000 ^b
Residual	141,063	124	1,138		
Total	175,181	126			

Based on the ANOVA table above, it can be seen that the probability value in the sig column. is 0.000. This value is smaller than 0.05. The calculated F value is greater than the F table (14.996 > 3.07). The F distribution table is searched at $\alpha = 0.05$ with df 1 = 1 (number of variables -1) and df 2 = 124 (n-k-1 or 127-2-1). So it can be concluded that H_0 is rejected and H_a is accepted, which means that there is a significant influence simultaneously (together) between the variables pedagogical competence (X1) and learning facilities (X2) on student learning outcomes (Y).

The coefficient of determination is used to see the magnitude of the influence of the independent variable on the dependent variable and determine the proportion or percentage of total variation in the dependent variable that is explained by the independent variables together. The results of testing the coefficient of determination in this research can be seen in the following table.

Table 4. Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,441 ^a	,195	,182	1,067	1,820

Based on the table above, it can be seen that the R square is 0.182 or 18.2%. This means that the influence of the independent variables, namely teacher pedagogical competence and learning facilities, on the dependent variable on student learning outcomes is 18.2%, while the rest is influenced by other factors.

Based on the data analysis that has been carried out, it has been proven that the variables of teacher pedagogical competence and learning facilities partially or simultaneously have an influence on student learning outcomes. The next step after testing the analysis prerequisites and hypothesis testing is discussing the research results.

1) The influence of teacher pedagogical competence on learning outcomes

Pedagogical competence is an ability related to students' understanding and management of educational and dialogical learning. Pedagogical competency is an important competency that a teacher must have without overriding other competencies. Pedagogical competency in this research is the independent variable (X1). The questionnaire about pedagogical competence consists of 30 statements. The lowest score in this statement is 354 which reads "To support learning teachers use internet media (Email, Facebook and other social media)", the second lowest score is 360 which reads "Teachers conduct pre-tests before learning activities". This shows that knowledge about information communication technology and mastery of teacher learning outcomes evaluation assessments is lacking and needs to be improved. Teachers must make more use of information and communication technology to support more advanced and better teaching and learning activities, and teachers

must give tests, both pre-test and post-test, more often so that they can find out which material has not been mastered from the assessments that have been carried out.

There are several indicators of pedagogical competency in this research, namely mastering the characteristics of students from physical, moral, spiritual, social, cultural, emotional and intellectual aspects. A teacher in teaching must of course know the character of each student, so that the learning process is conveyed well if the teacher already understands the student's character in learning. The next indicator is mastering learning theory and educational learning principles. It is important for teachers to know and master the learning materials and media, because if the teacher has not mastered them, it will be very difficult for students to understand the material taught by the teacher. The next indicator is developing a curriculum related to the subjects being taught. Teachers should be able to provide references for appropriate supporting material according to the lesson, and be able to explain the lesson material clearly and easily understood by students. The next indicator, Organizing educational learning. Teachers are an example for their students, so teachers should use good language when teaching, and not arbitrarily punish students who break the rules. The next indicator, utilizing information and communication technology for learning purposes, from the results of the questionnaire shows that in this indicator teachers lack mastery of information and communication technology, indicated by a low score in the statement "To support learning, teachers use internet media (Email, Facebook and other social media)". The next indicator is Facilitating the development of students' potential to actualize their various potentials by providing various learning activities to encourage students to achieve maximum learning outcomes. The next indicator is communicating effectively, empathetically and politely with students. A teacher should be able to establish close communication with students and be able to respond to each student's problems with a good attitude. The next indicator is carrying out assessments and evaluations of learning processes and outcomes, in this case the teacher's role in the assessment process of evaluating student learning outcomes is still lacking, indicated by the lowest score for the statement "Teachers conduct pre-tests before learning activities". The next indicator is utilizing the results of assessments and evaluations for learning purposes. Teachers should be able to utilize the function of conducting assessments and evaluations in order to know students' learning progress. The final indicator is taking reflective action to improve the quality of learning. A teacher should carry out reflective actions to improve the quality of learning after learning has taken place by holding questions or quizzes to remind them of the material that has just been presented which will make students understand and support maximum learning outcomes. So in this research it is proven that the presence of good teacher pedagogical competence will improve student learning outcomes.

The results of data analysis show that there is a positive influence of pedagogical competence on student learning outcomes. This can be proven from the results of the t test for the pedagogical competency variable (X1) showing that $t_{count} > t_{table}$ ($2,700 > 1,9794$) and significance value $t_{count} < t_{table}$ ($0,008 < 0,05$) sehingga dapat disimpulkan bahwa kompetensi pedagogik (X1) secara parsial memberikan kontribusi on the learning outcomes of XI students majoring in social sciences (Y). Based on data analysis, the regression coefficient value for the pedagogical competency variable (X1) was 0.035 with a positive relationship direction. This means that the independent variable pedagogical competence has a unidirectional and significant relationship with the dependent variable student learning outcomes. In other words, if the variable pedagogical competence (X1) increases by 1 unit, it will cause the variable student learning outcomes (Y) to increase by 0.035 units.

2) The influence of learning facilities on student learning outcomes

Every activity definitely requires supporting facilities to expedite it and achieve maximum results. Likewise with learning activities, of course, adequate learning facilities and facilities are needed so that complete facilities will motivate students to be more enthusiastic about studying at school. Learning facilities in this research are the independent variable (X2). The questionnaire about learning facilities consisted of 15. The lowest score was 322 which read "Utilization of tools that support economic learning activities has been maximized". The next lowest score was 332 which said "Books lent for studying in the library are appropriate to needs". This shows that learning facilities need to receive attention from the school so that learning facilities are improved and added according to students' needs to achieve maximum learning. Apart from the high and low pedagogical competency factors, the learning outcomes of XI students majoring in social sciences are also influenced by learning facilities, namely the facilities and infrastructure owned by the school. Based on the results of the questionnaire showing that some are still relatively low, it can be explained that the learning facilities are not in accordance with students' wishes and do not meet students' needs in supporting economic learning. There is a need for facilities and infrastructure that function to facilitate achieving maximum learning outcomes in economics learning.

Facilities and infrastructure that are well managed will have an impact on students' enthusiasm in participating in the learning process, thereby increasing maximum learning outcomes. In contrast to schools that do not have complete learning facilities, students will experience obstacles and disruptions in the economic learning process. In economics learning, things are really needed, such as worksheets or economics textbooks, whiteboards, tables and chairs, lighting. In conclusion, logically learning facilities will influence student learning

outcomes. The results of data analysis show that there is a positive influence of learning facilities on student learning outcomes. This is proven by the results of the t test for the learning facilities variable (X2) showing that $t_{count} > t_{table}$ ($3,375 > 0,05$) and significance value $t_{count} < t_{table}$ ($0,001 < 0,05$) so it can be concluded that learning facilities (X2) partially contribute to the learning outcomes of class XI students majoring in social sciences (Y).

Based on data analysis, the regression coefficient value for the learning facilities variable (X2) is 0.081 with a positive relationship direction. This means that the independent variable learning facilities has a unidirectional and significant relationship with the dependent variable student learning outcomes. In other words, if the learning facilities variable (X2) increases by 1 unit, it will cause the student learning outcomes variable (Y) to increase by 0.081 units. If the space or study area is adequate and comfortable for studying, students will get good learning results. A good place to study must consider good lighting and air circulation.

3) The influence of teacher pedagogical competence and learning facilities simultaneously (together) on student learning outcomes

The F test results obtained a probability value of 0.000; because the probability value is smaller than 0.05, H_0 is rejected or the calculated F value is greater than F table ($14.996 > 3.07$) so it is concluded that there is a significant influence between the variables of pedagogical competence and learning facilities which jointly influence student learning outcomes. Learning outcomes are an indicator of achieving learning objectives because they will provide information about the progress of each student. Based on the results of observations of questionnaire statement data, teacher pedagogical competence and learning facilities influence student learning outcomes because teachers teach using media and learning aids in delivering economic material (internet, powerpoint, image media and teaching aids) so that students have the motivation to understand the material better. learning, even though the use of learning aids is not optimal.

The research results show that pedagogical competence and learning facilities jointly influence student learning outcomes. In the economics learning process, students really need pedagogical competence and good learning facilities to achieve maximum learning outcomes. If the factors that influence learning outcomes are managed well and the quality is improved by all parties involved, they will have a positive impact and improve student learning outcomes which can be seen from test scores and students' daily test scores.

This research is in line with research conducted by Setiadi & Setiyani [15] where in this research there was a positive influence of teacher pedagogical competence on economic learning achievement and there was a positive influence of learning facilities on economic learning achievement. This research is in line with research conducted by Sutardi and Sugiharsono [28] which states that teacher competency has a positive and significant effect on student learning outcomes in economics subjects. So the teacher, as a determining factor in the success or failure of a lesson, must create learning that is normative, creative and fun.

The implication of this research is that it underscores the importance of investing in teacher training and professional development programs. This may include updating teaching methods, incorporating new educational technologies, and providing ongoing support to improve the overall quality of teaching of economics subjects. Meanwhile the limitation of this research is researchers only conduct research on economic subjects. Apart from that, of course there are many other variable factors that influence learning outcomes in economics subjects.

4. CONCLUSION

Based on the research results, the conclusions that can be put forward in this research are: 1) There is a positive influence of pedagogical competence on student learning outcomes as evidenced by the results of the t test for the pedagogical competence variable (X1) showing that $t_{hitung} > t_{tabel}$ ($2,700 > 1,9794$) and significance value $t_{hitung} < t_{tabel}$ ($0,008 < 0,05$) so that it can be concluded that pedagogical competence (X1) partially contributes to the learning outcomes of XI IPS students (Y); 2) There is a positive influence of learning facilities on student learning outcomes as evidenced by the results of the t test for the learning facilities variable (X2) showing that $t_{hitung} > t_{tabel}$ ($3,375 > 0,05$) and the significance value $t_{hitung} < t_{tabel}$ ($0,001 < 0,05$) so it can be concluded that learning facilities (X2) partially contribute to the learning outcomes of class XI IPS (Y) students; and 3) There is a significant influence between the variables of pedagogical competence and learning facilities which jointly influence student learning outcomes as evidenced by the results of the F test which obtained a probability value of 0.000; because the probability value is smaller than 0.05, H_0 is rejected or the calculated F value is greater than F table ($14.996 > 3.07$) so it is concluded that there is a significant influence between the variables of pedagogical competence and learning facilities which jointly influence student learning outcomes. The recommendation from this research for future research is to start with an extensive literature review to identify existing studies on the relationship between teacher pedagogical competence, learning facilities, and student learning outcomes in economics subjects. This will help in building a foundation for research and identifying gaps in current knowledge.

ACKNOWLEDGEMENTS

The authors would like to thank all parties involved for their valuable contributions in supporting this research.

REFERENCES

- [1] D. Darmaji, A. Astalini, D. A. Kurniawan, and F. T. Aldila, "Students' Perceptions in the Use of Web-Based Character Assessment: A View from Gender Perspective," *J. Pendidik. Progresif*, vol. 11, no. 2, pp. 362–383, 2021, doi: 10.23960/jpp.v.
- [2] A. Asrial, S. Syahrial, D. A. Kurniawan, F. T. Aldila, and M. Iqbal, "Gender and Perception: Implementation of Web-based Character Assessment on Students' Character Outcomes," *Int. J. Instr.*, vol. 15, no. 4, pp. 311–338, 2022, doi: 10.23887/jere.v6i1.37737.
- [3] Y. I. Suhara, N. D. Kiska, and F. T. Aldila, "Hubungan Karakter Gemar Membaca terhadap Hasil Belajar Tematik Peserta Didik Sekolah Dasar," *Integr. Sci. Educ. J.*, vol. 3, no. 1, pp. 11–15, 2022, doi: 10.37251/isej.v3i1.182.
- [4] Asrial, Syahrial, D. A. Kurniawan, F. T. Aldila, and M. Iqbal, "Implementation of Web-based Character Assessment on Students' Character Outcomes: A Review on Perception and Gender," *J. Technol. Sci. Educ.*, vol. 13, no. 1, pp. 301–328, 2023, doi: 10.29333/iji.2022.15418a.
- [5] D. Darmaji, A. Astalini, D. A. Kurniawan, F. T. Aldila, and H. Pathoni, "Gender and Perception: Implementation of Web-based Character Assessment in Science Learning," *J. Educ. Res. Eval.*, vol. 6, no. 1, pp. 131–142, 2022, doi: 10.23887/jere.v6i1.37737.
- [6] A. Sanova, A. Bakar, A. Afrida, D. A. Kurniawan, and F. T. Aldila, "Digital Literacy on the Use of E-Module Towards Students' Self-Directed Learning on Learning Process and Outcomes Evaluation Courses," *JPI (Jurnal Pendidik. Indones.*, vol. 11, no. 1, pp. 154–164, 2022, doi: 10.23887/jpi-undiksha.v11i1.36509.
- [7] W. A. Putri, R. Fitriani, E. F. S. Rini, F. T. Aldila, and T. Ratnawati, "Pengaruh Motivasi Terhadap Hasil Belajar Siswa IPA di SMAN 6 Muaro Jambi," *SAP (Susunan Artik. Pendidikan)*, vol. 5, no. 3, 2021.
- [8] S. Mundarti and F. T. Aldila, "Affective Assessment Instrument Based on Krathwohl-Anderson Taxonomy in Senior High School," *J. Eval. Educ.*, vol. 4, no. 2, pp. 74–79, 2023, doi: 10.37251/jee.v4i2.323.
- [9] E. F. S. Rini and F. T. Aldila, "Practicum Activity: Analysis of Science Process Skills and Students' Critical Thinking Skills," *Integr. Sci. Educ. J.*, vol. 4, no. 2, pp. 54–61, 2023, doi: 10.37251/isej.v4i2.322.
- [10] F. T. Aldila, M. M. Matondang, and L. Wicaksono, "Identifikasi Minat Belajar Siswa terhadap Mata Pelajaran Fisika di SMAN 1 Muaro Jambi," *J. Sci. Educ. Pract.*, vol. 4, no. 2, pp. 22–31, 2020.
- [11] M. Iqbal, A. A. B. Ginting, F. T. Aldila, W. A. Putri, S. Maryani, and T. Ratnawati, "Hubungan Persepsi Siswa dalam Penggunaan Web-Based Assessment dengan Karakter Siswa di SMPN 2 Batanghari," *J. Pendidik. Edutama*, vol. 9, no. 1, pp. 51–60, 2022.
- [12] R. Fitriani *et al.*, "Mendeskripsikan Keterampilan Proses Sains Siswa melalui Kegiatan Praktikum Viskositas di SMAN 1 Muaro Jambi," *PENDIPA J. Sci. Educ.*, vol. 5, no. 2, pp. 173–179, 2021, doi: 10.33369/pendipa.5.2.173-179.
- [13] M. A. Hascan and N. Saidah, "Persepsi Mahasiswa Prodi Bki Uin Sunan Kalijaga Terhadap Penerapan Metode Ceramah Di Masa Pembelajaran Daring," *TARBIYATUNA Kaji. Pendidik. Islam*, vol. 6, no. 1, pp. 1–23, 2022.
- [14] P. B. Prasetyo and N. P. Brataningrum, "Hubungan Penerapan Media Pembelajaran E-Learning, Metode Pembelajaran Berbasis Penugasan, Dan Peran Orang Tua Dengan Hasil Belajar Siswa Dalam Masa Pandemi Covid-19," *J. Pendidik. Ekon. dan Akunt.*, vol. 15, no. 2, pp. 13–26, 2022, doi: 10.24071/jpea.v15i2.4597.
- [15] D. Setiadi and R. Setiyani, "Pengaruh Kompetensi Pedagogik Guru dan Fasilitas Belajar terhadap Prestasi Belajar Melalui Motivasi Belajar," *Econ. Educ. Anal. J.*, vol. VII, no. 2, pp. 390–399, 2018.
- [16] M. Wulandari, R. P. Wirayuda, F. Aldila, and R. Wulandari, "Description of Students' Integrated Science Process Skills on Friction Material on a Flat Field," *Lensa J. Kependidikan Fis.*, vol. 8, no. 2, pp. 93–103, 2020, doi: 10.33394/j-lkf.v8i2.3206.
- [17] F. T. Aldila, R. P. W. Yuda, M. Wulandari, and A. P. Ningsi, "Deskripsi Keterampilan Proses Sains Siswa SMAN 10 Muaro Jambi pada Materi Keseimbangan pada Tali," *J. Pendidik. Fis.*, vol. 9, no. 2, pp. 112–119, 2020.
- [18] D. Darmaji, A. Astalini, D. A. Kurniawan, and E. F. Setiya Rini, "Gender Analysis in Measurement Materials: Critical Thinking Ability and Science Processing Skills," *J. Ilm. Pendidik. Fis. Al-BiRuNi*, vol. 11, no. 1, pp. 113–128, 2022, doi: 10.24042/jipf.
- [19] F. T. Aldila, D. Darmaji, and D. A. Kurniawan, "Analisis Respon Pengguna terhadap Penerapan Web-based Assessment pada Penilaian Sikap Siswa terhadap Mata Pelajaran IPA dan Nilai-nilai Pendidikan Karakter," *Edukatif J. Ilmu Pendidik.*, vol. 4, no. 1, pp. 1253–1262, 2022, doi: <https://doi.org/10.31004/edukatif.v4i1.2091>.
- [20] B. C. Putri, F. T. Aldila, and M. M. Matondang, "Hubungan Antara Karakter Mandiri Belajar Dengan Hasil Belajar Siswa," *Integr. Sci. Educ. J.*, vol. 3, no. 2, pp. 45–49, 2022, doi: 10.37251/isej.v3i2.252.
- [21] F. T. Aldila, E. F. S. Rini, S. W. Octavia, N. N. Khaidah, F. P. Sinaga, and N. Septiani, "The Relationship of Teacher Teaching Skills and Learning Interests of Physics Students of Senior High School," *Edufisika J. Pendidik. Fis.*, vol. 8, no. 1, pp. 101–105, 2023, doi: 10.59052/edufisika.v8i1.24864.
- [22] F. T. Aldila and E. F. S. Rini, "Teacher's Strategy in Developing Practical Values of the 5th Pancasila Preepts in Thematic Learning in Elementary School," *J. Basic Educ. Res.*, vol. 4, no. 1, 2023.
- [23] A. Ramadhanti, N. N. Simamora, E. Febri, S. Rini, and R. Fitriani, "Deskripsi Motivasi Belajar Fisika Siswa Kelas X MIPA di SMAN 1 Kota Jambi," *J. Eval. Educ.*, vol. 3, no. 3, pp. 82–86, 2022, doi: 10.37251/jee.v3i3.245.
- [24] M. M. Matondang, E. F. Setiya Rini, N. D. Putri, and F. Yolviansyah, "Uji Perbandingan Motivasi Belajar Siswa Kelas XI MIPA 2 dan XII MIPA 2 di SMA Negeri 1 Muaro Jambi," *J. Sains dan Pendidik. Fis.*, vol. 16, no. 3, p. 218, 2020, doi: 10.35580/jspf.v16i3.15553.

- [25] N. K. D. Yunita and N. K. D. Trisiantari, "Pengaruh Model Pembelajaran Kooperatif Tipe Tgt Berbasis Kearifan Lokal Tri Hita Karana Terhadap Hasil Belajar," *J. Pendidik. Multikultural Indones.*, vol. 1, no. 2, pp. 96–107, 2018, doi: 10.23887/jpmu.v1i2.20778.
- [26] D. Soraya, I. N. Jampel, and K. S. Diputra, "Pengaruh Model Pembelajaran Problem Based Learning (PBL) Berbasis Kearifan Lokal Terhadap Sikap Sosial Dan Berfikir Kritis Pada Mata Pelajaran Matematika," *Think. Ski. Creat. J.*, vol. 1, no. 2, p. 76, 2019, doi: 10.23887/tscj.v1i2.20409.
- [27] M. Hendri, L. Pramudya, and N. I. S. Pratiwi, "Analisis hubungan karakter semangat kebangsaan terhadap hasil belajar siswa," *J. Pembang. Pendidik. Fondasi dan Apl.*, vol. 7, no. 1, pp. 1–8, 2019, doi: 10.21831/jppfa.v7i1.25209.
- [28] S. Sutardi and S. Sugiharsono, "Pengaruh Kompetensi Guru, Motivasi Belajar, Dan Lingkungan Keluarga Terhadap Hasil Belajar Mata Pelajaran Ekonomi," *Harmon. Sos. J. Pendidik. IPS*, vol. 3, no. 2, pp. 188–198, 2016, doi: 10.21831/hsjpi.v3i2.8400.