OPEN ACCESS

International Journal of Pedagogical, Humanities and Social Studies | Vol. 1 No. 3 (2025)

Research Article

The Influence of Perceptions on the Use of Accurate Online Accounting Software and Project-Based Learning on Students' Critical Thinking Skills (Survey of Private Vocational Schools in the DKI Jakarta Region)

Muhammad Aziz Andriansyah
Universitas Indraprasta PGRI, Jakarta, Indonesia
Email: muhammadazizandriansyah9@gmail.com

Received:	Revised:	Accepted:	Online:
January 29, 2026	February 22, 2026	February 25, 2026	February 26, 2026

Abstract
Prompted by the consistently low critical thinking skills (levels 1–3) observed among vocational students, this study investigates how perceptions of Accurate Online accounting software and Project-Based Learning impact these skills. Less than 1% of students have achieved levels 4 and 5, and no students have achieved level 6 of thinking skills. This condition highlights the importance of enhancing critical thinking skills to improve students' cognitive levels. A quantitative survey methodology was utilized in this investigation. The target population comprised 90 twelfth-grade students enrolled in accounting specialization tracks within DKI Jakarta, selected through saturated sampling. Data were gathered via questionnaire instruments, with subsequent analysis employing correlation techniques, determination coefficients, and multiple linear regression. Results demonstrated a robust positive correlation ($r = 0.838$) linking the independent variables which are student perceptions of Accurate Online software and Project-Based Learning experiences to critical thinking competencies. The analytical model accounted for 70.3% of outcome variability ($R^2 = 0.703$), with 29.7% attributable to external factors. Regression outcomes verified that these predictors exert a jointly significant influence ($p = 0.000$). Consequently, the evidence supports the conclusion that both Accurate Online accounting software utilization and Project-Based Learning implementation constitute significant contributors to enhanced critical thinking abilities among students. Therefore, schools are expected to provide learning facilities that utilize user-friendly accounting software such as Accurate Online and to consistently implement project-based learning, as these approaches can significantly contribute to the improvement of students' critical thinking skills.

Keywords: Accurate Online, Critical Thinking Skills, Project-Based Learning

1. Introduction

Education holds a strategic position in cultivating high-caliber and competitive human capital within the context of globalization and digital transformation. The accelerated advancement of information technology has profoundly reshaped numerous life domains, particularly education and the professional world. Consequently, educational institutions must orient their learning processes not merely toward theoretical knowledge but also toward fostering advanced cognitive abilities, such as critical thinking. The PISA results highlight a persistent gap: Indonesian students' higher-order thinking skills fall short of OECD standards. A significant proportion remain at a basic cognitive stage, struggling especially with analytical and reasoning-based problem-solving. This situation highlights the need for learning innovations that encourage students to actively think critically and reflectively.

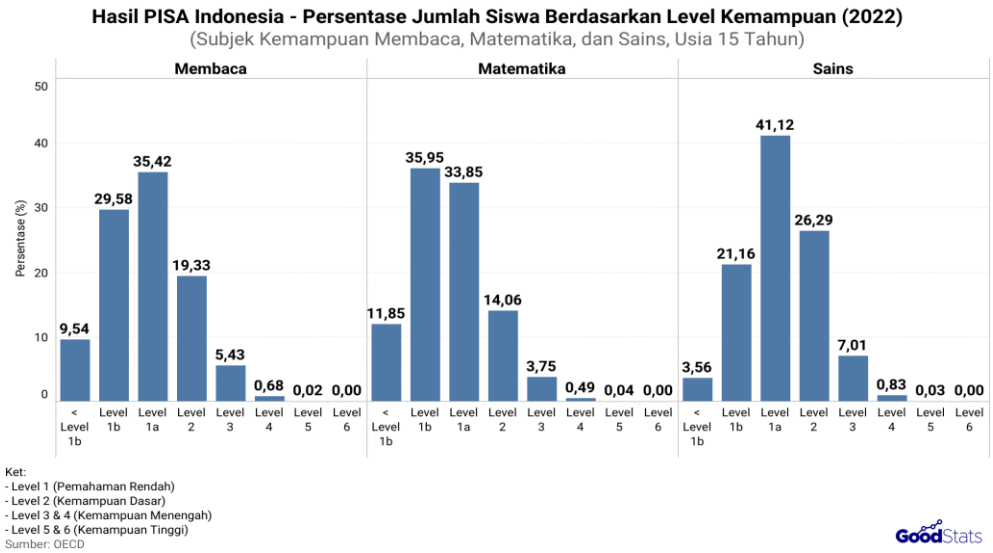

Figure 1. Percentage of Students by Ability Level (2022)
Source: Program for International Student Assessment (PISA)

The data reveals a concentration of student thinking skills at basic levels (1-3), with minimal representation at higher levels (4-5) and none at the highest level (6). This highlights the urgent need to enhance critical thinking, which entails systematic, in-depth reasoning, in order to raise overall cognitive attainment (Sihaloho et al., 2024). Through critical thinking, students develop greater proficiency in problem analysis, solution discovery, and the creation of multiple original ideas that deliver novel viewpoints on addressing challenges. In accounting learning, critical thinking skills are essential because students are faced with financial data processing, transaction analysis, and decision-making based on accounting information. However, accounting learning in schools still often uses conventional methods that focus on memorization and solving routine problems, thus lacking the ability to develop students' critical thinking skills.

The swift advancement of information technology during the industrial revolution 4.0 era renders the necessity for novel educational approaches, particularly within accounting, unavoidable (Iqbal & Arisman, 2019). The business and industrial world today demands a workforce that not only understands accounting concepts, but is also able to operate digital-based accounting software. One of the widely used software is Accurate Online. Accurate Accounting Software is an accounting system designed as a user-friendly accounting software (easy to use) with the ability to manage financial transaction recording quickly, precisely and accurately, which provides tax features and has been adjusted to tax regulations in Indonesia, with a relatively cheap license price compared to other accounting software of the same class in Indonesia (Andriansyah et al., 2025). Integrating this software into instruction is anticipated to deliver a learning experience that is both contextually grounded and closely aligned with authentic workplace practices.

Beyond technology, the learning model used is key to developing critical thinking. Project-Based Learning fosters this by engaging students in solving authentic problems, allowing them to discover and connect new knowledge to what they already know (Pratama & Prastyaningrum, 2016). Project-Based Learning (PjBL) is a learning model that emphasizes active student involvement through the completion of real projects. Lalu Setyawan et al. (2019) stated that project-based learning is an active, innovative, and enjoyable learning that uses projects/activities as its goal and ultimately produces tangible work that can be demonstrated such as reports, essays, and written assignments. Through PjBL, students are trained to plan, analyze, collaborate, and solve problems independently or in groups.

However, on the other hand, every school, whether public or vocational, is a formal institution with educational components such as teachers, students, teaching and learning facilities, learning media, curriculum subjects, and so on (Anggraini & Wulandari, 2020). Key stakeholders in any educational institution are its teachers and students, whose interaction is vital to realizing institutional objectives. The educational process is influenced by critical factors: the quality of student intake, available facilities and infrastructure, teaching materials, administrative support, and, importantly, teachers who can nurture a productive learning environment. A holistic approach to these components ensures the development of competent and well-rounded students (Asriningtyas et al., 2018).

Previous studies have established that the project-based learning (PBL) model incorporates key components of effective instruction. Through adaptable and strategically designed implementation, teachers can differentiate instruction to meet varied student capabilities. According to Hartini (2017), this approach also addresses common learning challenges such as low achievement, poor retention, attention deficits, slower learning pace, the need for extra stimulation, and difficulties with classroom and social adaptation. Nevertheless, there remains a scarcity of empirical research investigating the combined impact of PBL and Accurate Online accounting software on students' critical thinking skills.

Despite the growing body of research on project-based learning and technology integration in education, studies examining the combined effects of specific accounting software and PBL on higher-order thinking skills remain limited. While Prima et al. (2023) documented the implementation of Accurate Online training in vocational schools, their focus was primarily on students' ability to operate the software and prepare financial reports rather than on the development of critical thinking skills. Similarly, Dewi et al. (2023) and Sari et al. (2024) have demonstrated the effectiveness of PBL in enhancing learning outcomes and critical thinking, yet these studies did not investigate the integration of domain-specific accounting software within the PBL framework. Consequently, there remains a scarcity of empirical research investigating the combined impact of PBL and Accurate Online accounting software on vocational students' critical thinking skills.

The present research intends to fill this void by exploring: (1) the impact of student perceptions about Accurate Online accounting software usage upon critical thinking skills in vocational education; (2) project-based learning's effect on such skills; and (3) the combined contribution of both Accurate Online software perceptions and project-based learning approaches to critical thinking development.

2. Methods

In this study, the researcher used a quantitative method with a survey approach. According to Sugiyono (2019) the survey method, data is obtained or generated naturally in the form of opinions, characteristics, behaviors, or relationships between variables. This data is obtained from a sample taken from a specific population, using data collection techniques such as questionnaires, tests, interviews, and so on. To gather data concerning the impact of Accurate Online accounting software utilization and project-based learning on students' critical thinking abilities, the researcher developed and distributed a questionnaire for this investigation.

This study uses three variables, consisting of two independent variables (X1) and (X2) and one dependent variable (Y). The total population in this study was 95 students in the accounting expertise program who already had accurate data entry certificates and had taken accurate online learning at their school. According to Riduwan (2023) in his book, the population is defined as the entirety of the characteristics or units of measurement results that are the object of research. The sample used is a saturated sample, where the total population is used as a sample. According to Sugiyono (2019) in his

book, the sample is defined as a large portion of the number and characteristics possessed by the population. The data of the respondent used in this research can be seen in table 1.

Table 1. Respondent Data

No	School name	Region	Expertise Program	Amount
1	Happy Islamic Vocational School	West Jakarta	Accounting & Institutional Finance	40
2	Beautiful Souvenir Vocational School	West Jakarta	Accounting & Institutional Finance	5
3	Saint Paul Vocational School	Central Jakarta	Accounting & Institutional Finance	4
4	Pluit Raya Islamic Vocational School	North Jakarta	Accounting & Institutional Finance	41
	Total			**90**

Source: School Data

For data acquisition, the research team distributed survey instruments to every 12th-grade student at SMKS Islam Bahagia. The methodological framework featured two explanatory variables and one response variable. The research design in figure 1 below:

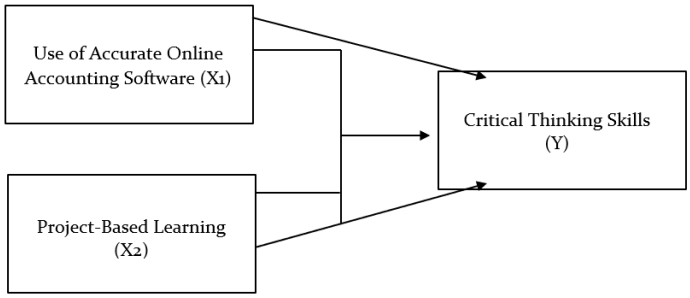

Figure 2. Research Design

Information:
X1 : Independent Variable, namely Perception of the Use of Accurate Online Accounting Software
X2: Project Based Learning
Y: Dependent Variable, namely Critical Thinking Ability

The method of data collection carried out by the researcher was by conducting observations in the field and by distributing questionnaires in the form of surveys to all class XII students of the accounting and financial expertise program at the Islamic Vocational School Bahagia.

3. Results and Discussion

3.1. Research Results

This research began with observations at the Bahagia Islamic Vocational School (SMKS Islam Bahagia). The researchers observed that the school is a vocational high school with an accounting and financial expertise program. They also observed that the sample school, a vocational high school, already has an active partnership with PT Ultima Tekno Solusindo, a partner of Accurate. However, students still lack critical thinking skills in accounting lessons. In line with these problems, the researcher attempted to conduct more in-depth research by distributing questionnaires to students at private vocational schools in the DKI Jakarta area, which were distributed to all 12th grade students who already had accurate data entry certificates, totaling 95 students. From the results of this research, the researcher created and processed the results using SPSS version 27 as shown in the attached results below:

3.1.1. Normality Test

Based on the results of the data processing and data analysis by the researcher, the normality test results were as shown in table 2.

Table 2. Normality Test Results

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			90
Normal Parameters [a,b]	Mean		.0000000
	Standard Deviation		3.78058796
Most Extreme Differences	Absolute		.091
	Positive		.086
	Negative		-.091
Test Statistics			.091
Asymp. Sig. (2- tailed) [c]			.063
Monte Carlo Sig. (2- tailed) [d]	Sig.		.066
	99% Confidence Interval	Lower Bound	.059
		Upper Bound	.072

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 926214481.

Source: Researcher Data Processing, 2026

The normality of the unstandardized regression residuals was evaluated using the Kolmogorov–Smirnov one-sample test with Lilliefors significance correction. A Monte Carlo method was employed to increase the reliability of the significance value. This analysis was based on a sample of 90 observations. Based on the test results, the following information was obtained. The average residual value (mean) is 0.000, which shows that the residuals are distributed symmetrically around the zero point. The residual standard deviation value is 3.7806, describing the residual variation in relation to the model's predicted value. Moreover, the Kolmogorov–Smirnov test yielded an absolute maximum difference of 0.091 between the empirical and theoretical normal distributions. The Asymp. Sig. (2-tailed) equals 0.063, whereas the Monte Carlo Sig. (2-tailed) stands at 0.066, accompanied by a 99% confidence interval spanning 0.059 to 0.072.

3.1.2. Multiple Linear Regression Analysis

Table 3. Multiple Linear Regression Analysis Results

Coefficients[a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	7.857	3.772		2.083	.040
	Using Accurate Online	.270	.099	.281	2.720	.008
	Project Based Learning	.583	.102	.592	5.736	.000

a. Dependent Variable: Critical Thinking Skills

Source: Researcher Data Processing, 2026

The regression equation that follows is formulated from the unstandardized coefficient values documented in table 3:

$$Y = 7.857 + 0.270X^2 + 0.583X^2$$

The variable Project Based Learning (β = 0.592) has a greater influence than Use of Accurate Online (β = 0.281). Thus, it can be concluded that Project Based Learning is the most dominant variable in improving critical thinking skills.

3.1.3. Analysis of the Coefficient of Determination

Table 4. Coefficient of Determination Analysis Results

Model Summary[b]				
Model	**R**	**R Square**	**Adjusted R Square**	**Standard Error of the Estimate**
1	.838[a]	.703	.696	3.82380
a. Predictors: (Constant), Project Based Learning, Use of Accurate Online				
b. Dependent Variable: Critical Thinking Skills				

Source: Researcher Data Processing, 2026

Multiple regression results (Table 4) show a strong correlation (R = 0.838) between the predictors (Project-Based Learning and Accurate Online software) and critical thinking skills. The coefficient of determination (R^2 = 0.703) reveals that these independent variables explain 70.3% of critical thinking variation, whereas 29.7% originates from unstudied elements.

3.1.4. Partial t-test

Table 5. t-Test Results

Coefficients [a]						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	7.857	3.772		2.083	.040
	Using Accurate Online	.270	.099	.281	2.720	.008
	Project Based Learning	.583	.102	.592	5.736	.000
a. Dependent Variable: Critical Thinking Skills						

Source: Researcher data processing (2026)

Results shown in table 5 reveal a statistically significant intercept (7.857, p = 0.040), meaning students possess a foundational level of critical thinking irrespective of the studied factors. While both Accurate Online and Project-Based Learning significantly contribute to critical thinking, Project-Based Learning is the dominant predictor.

3.1.5. Simultaneous F Test

Table 6. f-Test Results

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	3006.037	2	1503.018	102.796	.000 [b]
	Residual	1272.063	87	14.621		
	Total	4278.100	89			
a. Dependent Variable: Critical Thinking Skills						
b. Predictors: (Constant), Project Based Learning, Use of Accurate Online						

Source: Researcher data processing (2026)

The ANOVA outcomes in Table 6 demonstrate F = 102.796 with associated probability under 0.001. Because this falls below the conventional 0.05 cutoff, the regression framework is considered statistically significant. Consequently, the simultaneous influence of Project-Based Learning and Accurate Online accounting software on critical thinking skills is interpreted as meaningful rather than

accidental. Sum of Squares decomposition shows 3006.037 attributed to regression against 1272.063 attributed to residuals. This result demonstrates that variation in students' critical thinking abilities is more substantially explained by the regression model than by factors outside the model. Furthermore, the regression Mean Square of 1503.018 and the residual Mean Square of 14.621 reflect a considerable difference in variation between the model and the residual error, which directly contributes to the high calculated F value. Consequently, the regression model possesses strong explanatory power in accounting for the effect of the independent variables on the dependent variable.

3.2. Discussion

3.2.1. The Effect of Perception of the Use of Accurate Online Accounting Software on Critical Thinking Ability

Research findings indicate that Accurate Online employment carries an unstandardized coefficient of 0.270 (standard deviation = 0.099), achieves t = 2.720, and registers significance at 0.008. Given that this p-value is inferior to the 5 percent error margin, the effect of Accurate Online on critical thinking is both positive and significant. Interpretation reveals that per-unit increases in Accurate Online usage generate 0.270-unit gains in critical thinking when remaining variables are held steady. Furthermore, the standardized beta of 0.281 classifies this variable's contribution to critical thinking as moderate.

In this case, there is still very limited research on accurate online accounting software in learning activities at school, but there are already several community service journals that bring accurate online accounting software training activities to vocational high schools. One example is the accurate online training at SMK Tunas Muda Berkarya, Batam City. The Accurate Online training conducted by Prima et al. (2023) for SMK Tunas Muda Berkarya Accounting Study Program students was carried out in Sagulung District, Batam City. The implementing team consisted of 4 people with their respective roles.

Training outcomes which delivered via lecture and practice methodologies organized by the school within SMK Tunas Muda Berkarya's multipurpose room, with exercises administered following material presentation to attendees demonstrated that students exhibited considerable enthusiasm and all participants successfully kept pace. Learners stored their completed work in computer folders. Examination of these saved financial reports revealed that participants achieved solid comprehension under the guidance of the service team. Certain students, however, produced financial reports deviating from implementer instructions due to transaction input errors they committed.

Based on the problems outlined, this community service program will provide guidance to students of SMK Tunas Muda Berkarya with training in Accurate accounting software in preparing financial reports. Where the type of company chosen is a trading company's financial reports because transactions in trading companies are more complex when compared to service companies. Accounting reporting using Accurate is more widely used by companies and is easier to implement for financial report preparers, so that students can use the Accurate system operationally. We apply this solution by providing guidance on the use of computer accounting applications using Accurate along with sample questions and the creation of financial reports using computers with program applications using Accurate.

3.2.2. The Effect of Project Based Learning on Critical Thinking Ability

By comparison, Project Based Learning registers an unstandardized coefficient of 0.583 (standard deviation = 0.102), achieves t = 5.736, and attains significance at $p < 0.001$. This significance confirms that Project Based Learning significantly and positively affects critical thinking capabilities. Interpretation indicates that per-unit enhancements in Project Based Learning application yield 0.583-

unit improvements in critical thinking when alternative predictors are held constant. Moreover, the standardized beta of 0.592 establishes Project Based Learning as more influential than Accurate Online utilization.

This finding aligns with Dewi et al. (2023) whose second hypothesis test confirmed a significant effect of a STEM-based project-based learning model on science learning outcomes. Their ANOVA results (IBM SPSS 26.00) yielded an F-statistic of 28.369 (df = 1, p < 0.050). The experimental class, which utilized the STEM-PBL model, achieved a higher average learning outcome (80.24) compared to the control class taught conventionally (70.67). The researchers concluded that the significant difference stems from the model's emphasis on problem identification, independent solution-finding, and meaningful engagement through project activities, where students apply scientific knowledge to real-life contexts to create tangible products.

Corroborating evidence emerges from Sari et al. (2024) whose application of independent sample t-tests yielded significance at 0.000 (< 0.05) and consequent alternative hypothesis acceptance. The research confirms meaningful divergence between project-based learning and expository instruction effects on student critical thinking competencies. The researchers attribute this difference to the distinct pedagogical approaches: the experimental class's use of PjBL fostered critical thinking by engaging students in project work, encouraging independent resource exploration beyond teacher-provided materials, and shifting classroom dynamics toward student-led activity. These factors collectively enhance learners' cognitive engagement and academic performance.

3.2.3. The Influence of Perception of the Use of Accurate Online Accounting Software and Project Based Learning on Critical Thinking Ability

In aggregate, analysis of regression coefficients reveals that Accurate Online and Project-Based Learning both significantly advance learners' critical thinking abilities. Project-Based Learning, however, delivers a larger and more statistically significant contribution. Such findings substantiate that instructional strategies emphasizing active involvement, problem-solving competencies, and contextually grounded experiences prove more efficacious for critical thinking development than approaches centered solely on learning-support technologies. For this particular variable, no association was detected between combined Accurate Online accounting software use and Project-Based Learning regarding student critical thinking; thus, the research gap lies in the utilized theory and the variable linkages connecting X1 to Y and X1-X2 to Y.

4. Conclusion

The foregoing research results lead to the conclusion that Accurate Online accounting software utilization and project-based learning constitute crucial and decisive factors in enhancing critical thinking abilities for accounting subject comprehension. This investigation obtained a 70.3% value indicating that accounting software employment and project-based learning can shape students' critical thinking skills. Consequently, accounting software implementation and project-based learning which delivered through practice-oriented instruction and facilitated by user-friendly Accurate Online accounting software features serve to bolster critical thinking capabilities among accounting specialization program students. The limitation of this research is that it was only conducted in private vocational high schools in the DKI Jakarta area that already have a partnership with PT Ultima Tekno Solusindo and have been certified for accurate data entry and is only intended for class XII students, because class XII is a class that already understands the accounting cycle and has received accounting computer subjects. It is hereby recommended that vocational high schools strengthen project-based

learning and use accurate online accounting software to improve students' critical thinking skills in the institution's accounting and financial expertise programs.

5. References

Andriansyah, M. A., Lestari, F. A., & Wibowo, I. B. T. (2025). Peningkatan Kompetensi Guru Program Keahlian Akuntansi di SMKS Islam Bahagia Melalui Pelatihan Software Akuntansi Menggunakan Accurate 5. *Jurnal Abdi Nusantara Jelajah Indonesia (JANJI)*, *1*(2), 72–77. https://doi.org/10.70904

Anggraini, P. D., & Wulandari, S. S. (2020). Analisis Penggunaan Model Pembelajaran Project Based Learning Dalam Peningkatan Keaktifan Siswa. *Jurnal Pendidikan Administrasi Perkantoran (JPAP)*, *9*(2), 292–299. https://doi.org/10.26740/jpap.v9n2.p292-299

Asriningtyas, A. N., Kristin, F., & Anugraheni, I. (2018). Penerapan Model Pembelajaran Problem Based Learning Untuk Meningkatkan Kemampuan Berpikir Kritis Dan Hasil Belajar Matematika Siswa Kelas 4 SD. *Jurnal Karya Pendidikan Matematika*, *5*(1), 23–32. https://doi.org/10.26714/jkpm.5.1.2018.23-32

Dewi, N. N. S. K., Arnyana, I. B. P., & Margunayasa, I. G. (2023). Project Based Learning Berbasis STEM: Meningkatkan Kemampuan Berpikir Kritis dan Hasil Belajar Siswa. *Jurnal Ilmiah Pendidikan Profesi Guru*, *6*(1), 133–143. https://doi.org/10.23887/jippg.v6i1.59857

Hartini, A. (2017). Pengembangan Perangkat Pembelajaran Model Project Based Learning Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *ELSE (Elementary School Education Journal): Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, *1*(2a), 6–16. https://doi.org/10.30651/else.v1i2a.1038

Iqbal, J., & Arisman. (2019). Metode Pembelajaran E-Learning Menggunakan Technology Acceptance Modelling (TAM) Untuk Pembelajaran Akuntansi. *InFestasi*, *14*(2), 116–125. https://doi.org/10.21107/infestasi.v14i2.4856

Pratama, H., & Prastyaningrum, I. (2016). Pengaruh Model Pembelajaran Project Based Learning Berbantuan Media Pembelajaran Pembangkit Listrik Tenaga Mikrohidro Terhadap Kemampuan Berpikir Kritis. *Jurnal Penelitian Fisika Dan Aplikasinya (JPFA)*, *6*(2), 44–50. https://doi.org/10.26740/jpfa.v6n2.p44-50

Prima, A. P., Janrosl, V. S. E., Purba, N. M. B., Zetli, S., & Tipa, H. (2023). Pelatihan Accurate Online Di SMK Tunas Muda Berkarya Kota Batam. *Jurnal Pengabdian Ibnu Sina*, *2*(2), 109–114. https://doi.org/10.36352/j-pis.v2i2.569

Riduwan. (2023). *Dasar-dasar Statistika*. Alfabeta.

Sari, A. M., Siswandari, S., & Nurhaini, L. (2024). Pengaruh Model Project Based Learning Terhadap Peningkatan Kemampuan Berpikir Kritis Siswa Pada Mata Pelajaran Spreadsheet. *Tata Arta: Jurnal Pendidikan Akuntansi*, *10*(1), 53–65. https://jurnal.uns.ac.id/tata/article/view/104033

Setyawan, R. I., Purwanto, A., & Sari, N. K. (2019). Model Pembelajaran Berbasis Proyek (Project Based Learning) Untuk Meningkatkan Hasil Belajar. *Jurnal Dikdas Bantara*, *2*(2), 81–93. https://doi.org/10.32585/jdb.v2i2.372

Sihaloho, N. M., Abi, A. R., Sitepu, A., Sinaga, R., & Sari HS, D. W. (2024). Pengaruh Model Pembelajaran Problem Based Learning Terhadap Kemampuan Berfikir Kritis Siswa Muatan Pembelajaran IPAS Kelas IV SD Swasta Kartika 1-2. *Journal on Education*, *7*(1), 1294–1304. https://doi.org/10.31004/joe.v7i1.6651

Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.