RISET : Jurnal Ilmiah Multidisiplin Ilmu
Published by PT. Ahlal Publisher Nusantara, Indonesia
Volume 1 No 3 April 2026 E-ISSN : 3123-8475
Journal Homepage: https://jurnalriset.com/index.php/riset/index

# The Influence of Deep Learning Approach and Learning Motivation on Science Learning Outcomes of Phase C Elementary School Students in Cluster 1, South Tondano District

**Trinny Meifira Kalalo[1], Widdy H.F. Rorimpandey[2], Ni Dewi Eka Suwaryaningrat[3]**
[1,2,3] Master of Elementary Education Study Program, Universitas Negeri Manado, Indonesia
Email : kalalotrinnymeifira@gmail.com

## Article Info

**Corresponding Author:**
Penulis Korespondensi
✉ kalalotrinnymeifira@gmail.com

**History:**
Submitted: 20-04-2026
Revised: 21-04-2026
Accepted: 23-04-2026

**Keywords:** **Deep Learning Approach, Learning Motivation, Learning Outcomes.**

**Kata Kunci:** **Pendekatan Deep Learning, Motivasi Belajar, Hasil Belajar.**



https://doi.org

## Abstract

*This study aims to determine the influence of the deep learning approach and learning motivation on science learning outcomes of Phase C elementary school students in Cluster 1, South Tondano District. This research employs a quantitative approach with a causal associative research type. The sample consisted of 112 students selected through purposive sampling and saturated sampling techniques. Data collection was conducted using a survey method with questionnaire instruments. Data analysis utilized simple linear regression and multiple linear regression with SPSS version 25 for Windows. The results showed that: (1) There is a positive and significant influence of the deep learning approach on science learning outcomes of Phase C elementary students by 40.2%, with tcalculated > ttable (8.595 > 1.981); (2) There is a positive and significant influence of learning motivation on science learning outcomes of Phase C elementary students by 53.5%, with tcalculated > ttable (11.244 > 1.981); and (3) There is a positive and significant influence of the deep learning approach and learning motivation together on science learning outcomes of Phase C elementary students by 62.9%, with Fcalculated > Ftable (92.306 > 3.080). In conclusion, the deep learning approach and learning motivation have a positive and significant influence on science learning outcomes of Phase C students in Cluster 1, South Tondano District.*

## Abstrak

*Penelitian ini bertujuan untuk mengetahui pengaruh pendekatan deep learning dan motivasi belajar terhadap hasil belajar IPA siswa sekolah dasar Fase C di Gugus 1 Kecamatan Tondano Selatan melalui pendekatan kuantitatif asosiatif kausal terhadap 112 siswa. Data yang dikumpulkan melalui kuesioner dan dianalisis menggunakan regresi linear menunjukkan bahwa pendekatan deep learning berpengaruh positif dan signifikan terhadap hasil belajar sebesar 40,2% ($t_{hitung} \: 8,595 > t_{tabel} \: 1,981$), motivasi belajar berpengaruh sebesar 53,5% ($t_{hitung} \: 11,244 > t_{tabel} \: 1,981$), serta secara bersama-sama kedua variabel tersebut memberikan pengaruh signifikan sebesar 62,9% ($F_{hitung} \: 92,306 > F_{tabel} \: 3,080$). Dengan demikian, dapat disimpulkan bahwa pendekatan deep learning dan motivasi belajar, baik secara mandiri maupun bersama-sama, memiliki peran krusial dalam meningkatkan hasil belajar IPA siswa Fase C di wilayah tersebut.*

# INTRODUCTION

Education plays an important role in developing students' potential holistically, including aspects of knowledge, skills, and attitudes. The success of the educational process is reflected in student learning outcomes as a primary indicator for assessing the success of learning at school. In the context of science learning in elementary schools, particularly at Phase C, students are not only required to master concepts but also to think critically, analyze, and apply knowledge in real-life situations.

However, in reality, the quality of learning in Indonesia remains relatively low. This is evident from the 2022 Programme for International Student Assessment (PISA) results, which placed Indonesia at 71st out of 81 countries with an average score of 383, far below the average of 489. This condition indicates that students' ability to understand and apply knowledge is still not optimal. In line with this, the science learning outcomes of Phase C students in elementary schools still show considerable variation, where some students have not achieved the expected learning outcomes.

Based on initial observations of Phase C students (grades V and VI) in Cluster 1, South Tondano District, it was found that cognitive domain learning outcomes are still not optimal. This is evident from the fact that some students have not yet reached the criteria for achieving learning objectives (KKTP), particularly in analyzing ecosystem components, evaluating the impact of human activities on ecosystem balance, and creating simple solutions related to environmental conservation. Furthermore, during the learning process, students were observed to be less enthusiastic, passive, have difficulty concentrating, be less active in discussions, and give up easily when facing higher-order thinking questions. This situation indicates that the ongoing learning tends to be oriented toward surface learning, where students mostly memorize material without understanding concepts deeply.

This problem is also inseparable from the less-than-optimal student engagement in the learning process. As stated by Tarusu (2018:264), good learning is learning that actively involves students in the learning process, thus positively affecting optimal learning outcomes. However, in reality, active student engagement in learning remains low, which impacts the underdevelopment of critical thinking skills. In fact, critical thinking skills are essential for understanding material deeply. Monigir et al. (2024:7879) state that student engagement in discussions, asking questions, and expressing opinions shows that students not only understand the material but also develop critical thinking skills, while Pangkey et al. (2024:22023) affirm that critical thinking enables students to understand subject matter more deeply and increases curiosity and learning motivation.

Additionally, an internal factor that influences learning outcomes is learning motivation. Low learning motivation causes students to be less active and less enthusiastic in following the learning process, thereby resulting in low learning outcomes (Rorimpandey et al., 2022:22). The higher the student's learning motivation, the more their learning outcomes improve.

Thus, high learning motivation will strengthen the effectiveness of the learning process and contribute to achieving optimal learning outcomes.

One approach that can be used to address these problems is the deep learning approach. This approach emphasizes active student engagement, linking new knowledge with prior experience, and applying concepts in real situations, thus enabling the development of higher-order thinking skills (Suyanto, 2025:4). Moreover, this approach has the potential to increase student learning motivation because it provides more meaningful and challenging learning experiences. Increased learning motivation will strengthen the effectiveness of the learning approach, thereby having a positive impact on learning outcomes.

Nevertheless, based on a review of previous studies, most research has examined the influence of the deep learning approach and learning motivation separately on learning outcomes. Furthermore, research specifically examining the simultaneous influence of these two variables on science learning outcomes of Phase C elementary school students, particularly in Cluster 1, South Tondano District, has never been conducted. Thus, there is a research gap that needs to be further investigated.

Based on the above description, further research is necessary under the title "The Influence of the Deep Learning Approach and Learning Motivation on Science Learning Outcomes of Phase C Elementary School Students in Cluster 1, South Tondano District".

# RESEARCH METHOD

This research uses a quantitative method with a causal associative research type. Causal associative in this study is used to determine the influence of the deep learning approach ($X_1$) and learning motivation ($X_2$) on science learning outcomes (Y). Research data were obtained through a survey; the survey was used to obtain data from natural settings. To obtain research data, the researcher distributed questionnaires (Sugiyono, 2013:142). The questionnaire was administered by the researcher to obtain data on the deep learning approach variable and learning motivation variable. For the learning outcome variable, summative scores at the end of the unit were taken to measure the cognitive understanding level of Phase C students in science lessons on ecosystem material.

This research employed a regression model with three variables. Simple regression was used to test hypotheses 1 and 2, namely the influence of the deep learning approach ($X_1$) on learning outcomes (Y), and the influence of learning motivation ($X_2$) on learning outcomes (Y). Meanwhile, multiple regression was used to test hypothesis 3, namely the influence of the deep learning approach ($X_1$) and learning motivation ($X_2$) on learning outcomes (Y).

This research was conducted at SD Negeri 1 Tataaran, Inpres Tataaran 1, and SD Inpres Tataaran 2 from January 2026 to March 2026. The population in this study was all Phase C students (grades V and VI) of elementary schools in Cluster 1, South Tondano District, totaling 301 students

consisting of 153 male and 148 female students. The research sample was determined using purposive sampling at the school level. According to Sugiyono (2017:85), purposive sampling is a sample determination technique based on certain considerations. School selection was based on the consideration that these schools implement the deep learning approach, have an adequate number of Phase C students, have relatively similar learning characteristics, and allow access and research permits to be carried out optimally. Furthermore, the student sampling technique used saturated sampling, meaning all Phase C students (grades V and VI) in the three selected schools became the research sample, totaling 112 students.

Data collection techniques were carried out by collecting learning outcome documents, observation—which is not only useful for understanding students but also for collecting information about student development holistically (Suwaryaningrat, 2023:1013). Observations conducted by the researcher in this study aimed to determine how the deep learning approach was implemented during learning. Additionally, data collection was also done by distributing questionnaires. The instrument in this study used a questionnaire to obtain data on the deep learning approach and learning motivation variables. Meanwhile, the learning outcome variable was obtained from written scores of summative assessments (end of unit) to determine students' level of understanding of the material provided. This study used a Likert scale to measure the deep learning approach and learning motivation variables by assigning scores to the questionnaire answers filled out by respondents. Before being distributed to respondents, validity and reliability tests were conducted on the deep learning approach instrument and the learning motivation instrument. Validity testing in this study was performed using Pearson Product Moment analysis with the help of SPSS version 25 for Windows. Reliability testing was carried out after validity testing; in this study, reliability was tested using Cronbach's Alpha formula. If $r_{calculated}$ is greater than $r_{table}$, the instrument is declared reliable. According to Wiratna Sujerweni (2014:193), a questionnaire is declared reliable if the Cronbach's alpha value > 0.60.

# RESULTS AND DISCUSSION

The prerequisite test aims to determine whether the research data has met the assumptions required for statistical analysis so that the analysis results obtained can be trusted.

**Deep learning approach ($X_1$)**: Data collection for this variable used a questionnaire containing 20 statements, distributed to 112 Phase C student respondents in Cluster 1, South Tondano District. The results obtained: range value of 55, minimum score of 40, maximum score of 95, mean of 70.82, standard deviation of 15.038, and variance of 226.130.

**Learning motivation ($X_2$)**: Data collection for this variable used a questionnaire containing 20 statements, distributed to 112 Phase C student respondents in Cluster 1, South Tondano District. The results obtained: range value of 62, minimum score of 32, maximum score of 94, mean of 68.88,

standard deviation of 16.125, and variance of 260.002.

**Science learning outcomes (Y)**: Data collection used the summative science learning outcomes at the end of the learning unit on ecosystem material for Phase C students in Cluster 1, South Tondano District, implementing the deep learning approach. The results obtained: range value of 26, minimum score of 70, maximum score of 96, mean of 82.92, standard deviation of 6.404, and variance of 41.021.

**Normality test** using one-sample Kolmogorov-Smirnov obtained Asymp. Sig. (2-tailed) value of 0.200, which is greater than 0.05. This indicates that the residual data is normally distributed. **Linearity test** between deep learning approach and learning outcomes showed deviation from linearity value of 0.390 > 0.05, so there is a linear relationship. Next, linearity test between learning motivation and learning outcomes showed deviation from linearity value of 0.716 > 0.05, also linear. **Homogeneity test** using Levene's Test obtained a significance value of 0.569 (> 0.05), so the data variances of $X_1$ and $X_2$ are homogeneous. **Heteroscedasticity test** using Glejser test obtained significance values of 0.179 ($X_1$) and 0.212 ($X_2$), both > 0.05, so no heteroscedasticity. **Multicollinearity test** showed VIF of 1.342 (<10) and tolerance of 0.745 (>0.1), so no multicollinearity.

## *Hypothesis 1 Test Result*

There is a significant influence of the deep learning approach on science learning outcomes of Phase C students in Cluster 1, South Tondano District.

**Table 4.7 Simple regression test results variable $X_1$ – Y**

| Variable | a | b | R | $R^2$ |
|---|---|---|---|---|
| $X_1$ – Y | 63.803 | 0.270 | 0.634 | 0.402 |

Based on the table, $t_{calculated}$ = 8.595, $t_{table}$ at significance 0.05 (df=110) = 1.981. Thus $t_{calc} > t_{table}$ (8.595 > 1.981). Therefore, the deep learning approach has a significant influence on learning outcomes.

## *Hypothesis 2 Test Result*

There is a significant influence of learning motivation on science learning outcomes of Phase C students in Cluster 1, South Tondano District.

**Table 4.7 Simple regression test results variable $X_2$ – Y**

| Variable | a | b | R | $R^2$ |
|---|---|---|---|---|
| $X_2$ – Y | 62.916 | 0.290 | 0.731 | 0.535 |

$t_{calculated}$ = 11.244, $t_{table}$ = 1.981 → 11.244 > 1.981. Thus, learning motivation has a significant influence on learning outcomes.

## *Hypothesis 3 Test Result*

There is a significant influence of the deep learning approach and learning motivation together on science learning outcomes of Phase C students in Cluster 1, South Tondano District.

**Table 4.8 Multiple regression test results variables $X_1, X_2 – Y$**

| Variable | A | $b_1$ | $b_2$ | R | $r^2$ | Sig. F Change | $F_{calc}$ | $F_{table}$ |
|---|---|---|---|---|---|---|---|---|
| $X_1X_2 – Y$ | 57.108 | 0.151 | 0.219 | 0.793 | 0.629 | 0.000 | 92.306 | 3.080 |

$F_{calculated}$ = 92.306, $F_{table}$ (0.05, df=110) = 3.080 → 92.306 > 3.080. Thus, the deep learning approach and learning motivation together have a significant influence on learning outcomes. Therefore $H_0$ is rejected and $H_a$ is accepted.

## *Influence of Deep Learning Approach on Learning Outcomes*

Based on testing hypothesis 1 with simple linear regression, the regression equation is $Y = 63.803 + 0.270X_1$. This means that if the deep learning approach increases by 1%, learning outcomes increase by 0.270. The correlation (R) is 0.634, indicating a positive influence. The coefficient of determination ($r^2$) is 0.402 (40.2%), meaning the deep learning approach contributes 40.2% to science learning outcomes. $t_{calc} > t_{table}$ (8.595 > 1.981), thus the deep learning approach has a positive and significant effect on student learning outcomes with a contribution of 40.2%.

## *Influence of Learning Motivation on Learning Outcomes*

Based on hypothesis 2, the regression equation is $Y = 62.916 + 0.290X_2$. An increase of 1% in learning motivation increases learning outcomes by 0.290. R = 0.731 (positive influence). $r^2$ = 0.535 (53.5%), meaning learning motivation contributes 53.5% to learning outcomes. $t_{calc}$ = 11.244 > 1.981, so learning motivation has a positive and significant effect with a contribution of 53.5%. Students with high learning motivation tend to be more active, persistent, and have a strong desire to achieve better results.

## *Joint Influence of Deep Learning Approach and Learning Motivation on Learning Outcomes*

Based on hypothesis 3 (multiple regression), the equation is $Y = 57.108 + 0.151X_1 + 0.219X_2$. If $X_1$ increases by 1%, Y increases by 0.151; if $X_2$ increases by 1%, Y increases by 0.219. R = 0.793 (positive influence). $r^2$ = 0.629 (62.9%), meaning the combined contribution of deep learning approach and learning motivation to learning outcomes is 62.9%. $F_{calc}$ = 92.306 > 3.080, thus both variables together have a positive and significant influence on learning outcomes.

Based on the discussion, it can be concluded that the deep learning approach and learning motivation each have a good and positive influence on students' science learning outcomes. This shows that the better the implementation of deep learning and the higher the students' learning motivation, the more optimal the learning outcomes will be. The combination of an appropriate learning approach and high learning motivation creates a more effective learning process, increases active student engagement, and promotes deeper understanding. Thus, both variables are important factors in improving the quality of student learning outcomes.

# CONCLUSION

Based on the results and discussion regarding the influence of the deep learning approach and learning motivation on science learning outcomes of Phase C students in Cluster 1, South Tondano District, the following conclusions can be drawn:

1. There is a positive and significant influence of the deep learning approach on science learning outcomes of Phase C students in Cluster 1, South Tondano District.
2. There is a positive and significant influence of learning motivation on science learning outcomes of Phase C students in Cluster 1, South Tondano District.
3. There is a positive and significant influence of the deep learning approach and learning motivation together on science learning outcomes of Phase C students in Cluster 1, South Tondano District.

# REFERENCES

Datu, A., Tumurang, H., & Sumilat, J. (2022). Pengaruh Motivasi Belajar terhadap Hasil Belajar Siswa di Tengah Pandemi Covid-19. *Jurnal Basicedu*, *6*(2), 1959-1965.

Dewi, A., Rusilowati. A., (2025). Pengaruh Penerapan Pembelajaran Mendalam (Deep Learning) Terhadap Hasil Belajar IPAS Peserta Didik Kelas V Sd Muhammadiyah Karangturi. *Jurnal Ilmiah Pendidikan Dasar*, *10*(2), 259-267.

Najoan, R. A. O., Goni, A. M., & Mongkau, J. G. (2024). Pengaruh kreativitas guru dan motivasi belajar siswa terhadap hasil belajar matematika siswa kelas V sekolah dasar. *Jurnal Ilmiah Wahana Pendidikan*, *10*(9), 921-924.

Rorimpandey, W. H. F., Mangangantung, J. M., & Wentian, S. (2022). Pengaruh Kreativitas Guru dan Motivasi Belajar Siswa Terhadap Hasil Belajar Siswa Kelas V SD Negeri di Kecamatan Wanea. *Jurnal Inovasi Teknologi Pendidikan*, *9*(1), 15-24.

Rorimpandey, W. H. F., Goni, A., Mahagia, F. A. (2023). Model Pembelajaran Problem Based Learning (PBL) Meningkatkan Hasil Belajar Matematika Siswa. *Jurnal Ilmiah Wahana Pendidikan*. *9*(24), 1055-1066.

Sengkey, M., Sinaulan, N., Wulus, J., Paat, A., & Ngodu, S. (2026). Hubungan Antara Motivasi Intrinsik Dan Prestasi Akademik: Tinjauan Pustaka. *Jurnal Ilmiah Wahana Pendidikan*, 12(1.A), 36-42.

Sinaga, P., Sihombing, S., & Simamora, B. (2025). Pengaruh Motivasi Belajar dan Disiplin Belajar Terhadap Hasil Belajar Siswa pada Mata Pelajaran Ekonomi Kelas XI SMA Negeri 5 Pematangsiantar T.A 2025/2026. *Jurnal Pengabdian Masyarakat Dan Riset Pendidikan*, *4*(2), 7944-7956.

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Sugiyono. (2017). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Sujarweni. (2014). *Metodologi Penelitian: Lengkap, Praktis, dan Mudah Dipahami*. Yogyakarta: Pustaka Baru Press.

Suwaryaningrat, N. D. (2023). Analisis teknik observasi dalam pembelajaran pendidikan anak usia dini. *Jurnal Ilmiah Wahana Pendidikan*, 9(24), 1011-1015.

Timbuleng, N., Lengkong, J., & Dapa, A. (2023). Kompetensi kepribadian guru dalam pembentukan karakter siswa di SDN Unggulan 1 Kabupaten Pulau Morotai Provinsi Maluku Utara. *Jurnal Ilmiah Wahana Pendidikan*, 9(21), 1080-1096.