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Teacher-Reported Deep Learning Implementation and Students' Learning Interest in Elementary Schools of Sekayam Subdistrict

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ABSTRACT

Students' learning interest is an important dimension of elementary education because it is closely related to engagement, participation, and students' willingness to sustain learning activities. In the context of *Kurikulum Merdeka*, the deep learning approach has been increasingly discussed as a pedagogical strategy that may support meaningful, mindful, and joyful learning. This study aimed to examine the exploratory association between teacher-reported deep learning implementation and fourth-grade students' learning interest in elementary schools of Sekayam Subdistrict. A small-scale exploratory quantitative survey design was employed. The study involved 85 fourth-grade students from four elementary schools and four homeroom teachers representing different school contexts, including remote, mixed rural-urban, and subdistrict-center settings. Data were collected using two closed-ended questionnaires: a 12-item learning interest questionnaire completed by students and a 12-item deep learning implementation questionnaire completed by teachers. The data were analyzed using descriptive statistics, validity and reliability tests, residual normality testing, homogeneity testing, and exploratory simple linear regression. The learning interest questionnaire was valid and reliable, with item-total correlations ranging from 0.477 to 0.663 and a Cronbach's alpha value of 0.784. The regression result showed a positive coefficient for deep learning implementation, but the association was not statistically significant (B = 0.463; Beta = 0.177; p = 0.106). These findings suggest a weak positive tendency between teacher-reported deep learning implementation and students' learning interest; however, the available data did not provide sufficient statistical evidence to confirm a significant relationship.

Keywords: *Deep Learning Implementation, Learning Interest, Elementary School, Quantitative Survey, Kurikulum Merdeka*

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A. INTRODUCTION

Declining learning interest among elementary school students has become an important concern in Indonesian education, particularly amid curricular transition and the growing presence of educational technology. Low learning interest may affect students' academic engagement, skill development, and character formation. Novita Ahmad et al. (2020) define learning interest as a learner's tendency to participate in the learning process with enjoyment and without external coercion. This construct includes several indicators, such as enjoyment, attraction, acceptance, and student involvement. In this

context, innovative instructional approaches are increasingly needed to encourage participation and strengthen students' interest in learning. Teacher-centered instruction tends to make students less active, more prone to boredom, and less engaged in critical thinking processes (Nuraeni et al., 2025). Previous studies suggest that meaningful and contextual learning through a deep learning approach can potentially foster curiosity, engagement, and learning autonomy because students are encouraged to connect knowledge with personal experience and reflection (Sari & Arta, 2025).

The deep learning approach is relevant to the current direction of educational transformation in *Kurikulum Merdeka* (Independent Curriculum). Arif et al. (2025) explain that deep learning is an instructional approach that enables students to develop a more profound understanding of a subject and strengthen their ability to analyze and solve problems. This approach consists of three main components. The first is meaningful learning, which refers to a learning process in which students connect new knowledge with prior experience or existing understanding. The second is mindful learning, which emphasizes students' active and focused engagement throughout the learning process. The third is joyful learning, which aims to create positive, motivating, and enjoyable learning experiences. These components may contribute to deeper, more relevant, and more motivating classroom experiences by integrating contextual understanding, focused attention, and a supportive learning atmosphere. In this sense, deep learning can be viewed as a pedagogical strategy that is conceptually aligned with the formation of *Profil Pelajar Pancasila* (Pancasila Student Profile), particularly in developing independent, reflective, and innovative learners.

Kurikulum Merdeka emphasizes varied learning activities, project-based learning, and the development of the *Profil Pelajar Pancasila*, which requires students to become reflective, critical, collaborative, and adaptive learners (Hidayat et al., 2025). This transformation, however, requires teachers to design instructional strategies that cultivate intrinsic motivation rather than focusing narrowly on cognitive achievement. Deep learning may therefore be understood as a pedagogical approach that seeks to help students understand learning materials in a meaningful, reflective, and contextually relevant manner. Through this approach, students are guided to recognize what they learn, how they learn, and why the knowledge is relevant to their everyday lives.

Several previous studies have examined the use of deep learning in elementary education. Asmi and Wijayanto (2025) reported a significant increase in students' learning outcomes after the implementation of a deep learning approach, with the mean pretest score increasing from 67.19 to 83.50 in the posttest. However, the implementation of deep learning at the elementary school level remains less than optimal in several contexts (Tahel et al., 2025). Existing studies have also tended to focus on qualitative inquiry, limited experimental designs, or students' learning outcomes, while fewer studies have examined the exploratory relationship between teacher-reported deep learning implementation and students' learning interest through a quantitative survey approach across different school environments.

A preliminary observation conducted at SDN 20 Mabah, Sekayam Subdistrict, on July 14, 2025, indicated several classroom problems related to students' learning interest. These problems were reflected in limited student participation during learning activities, students' passivity when teachers asked questions, and students' tendency to be more active outside the learning task, such as talking or playing with classmates, rather than focusing on the instructional material. These classroom indications suggest the need to examine learning interest in relation to the instructional approaches implemented by teachers.

Within this context, a small-scale quantitative survey-based study is needed to provide an exploratory empirical description of the extent to which teacher-reported implementation of a deep learning approach is associated with the learning interest of fourth-grade elementary school students in Sekayam Subdistrict. A survey approach allows researchers to collect data from schools with different environmental characteristics and to identify patterns, tendencies, and relationships between deep learning implementation and students' learning interest (Herlinda Restiani, 2024). This gap provides the basis for the present study. This study aims to examine the association between teacher-reported deep learning implementation and elementary school students' learning interest in the era of *Kurikulum Merdeka*.

B. METHODS

Research Design

This study employed a small-scale exploratory quantitative survey design to examine the association between teacher-reported implementation of the deep learning approach and students' learning interest in fourth-grade elementary classrooms in Sekayam Subdistrict. This design was considered appropriate because the study sought to describe statistical patterns and tendencies across schools with different environmental characteristics rather than to test an experimental treatment or establish causal effects. Therefore, the findings were interpreted as exploratory evidence of statistical tendency, not as definitive causal evidence.

Research Site and Participants

The study was conducted in four elementary schools selected purposively to represent different school contexts in Sekayam Subdistrict. SDN 20 Mabah and SDN 18 Entubah represented schools located in more remote areas, SDN 16 Kenaman represented a mixed rural-urban context, and SDN 01 Balaikarangan represented a school located in the subdistrict center. After the schools were selected, all fourth-grade students in those schools were included through total sampling. The student sample consisted of 85 students: 14 students from SDN 20 Mabah, 17 from SDN 18 Entubah, 22 from SDN 16 Kenaman, and 32 from SDN 01 Balaikarangan. Four fourth-grade homeroom teachers, one from each school, were also involved to provide data on the implementation of the deep learning approach in their respective classrooms. Because only four schools and four homeroom teachers were involved, this study should be understood as a small-scale exploratory survey. The purpose was not to generalize the findings to all elementary

schools, but to provide an initial empirical description of the relationship between teacher-reported deep learning implementation and students' learning interest in the selected school contexts.

Instruments and Data Collection

Data were collected using two closed-ended questionnaires with a five-point Likert scale. The first questionnaire measured students' learning interest and consisted of 12 items developed based on indicators of learning interest, including enjoyment, attraction, acceptance, and student involvement. This questionnaire was completed by the 85 student respondents. The second questionnaire measured the implementation of the deep learning approach and consisted of 12 items based on three components of deep learning: meaningful learning, mindful learning, and joyful learning. This questionnaire was completed by the four homeroom teachers. Because the implementation score was obtained at the teacher or school level, it was treated as a contextual indicator of the classroom learning environment rather than as an individual student-level measure.

Each student's learning interest score was paired with the deep learning implementation score reported by the homeroom teacher in the same school. This procedure allowed the study to explore the statistical tendency between classroom-level deep learning implementation and student-level learning interest, while recognizing the limitation that the independent variable was measured at the teacher or school level and had limited variation across the four schools.

Data Analysis

The data were analyzed using SPSS. Before the main analysis, the learning interest questionnaire was tested for validity using Pearson product-moment correlation and for reliability using Cronbach's alpha. The deep learning implementation questionnaire was not subjected to the same reliability testing because it was completed by only four teachers; therefore, its results were interpreted cautiously as contextual classroom data. The analysis included descriptive statistics, a residual normality test, a homogeneity test, and exploratory simple linear regression. The exploratory regression analysis was used to estimate whether the available data indicated a statistical tendency between teacher-reported deep learning implementation and students' learning interest. Given the limited number of teacher-level observations, the narrow variation in implementation scores, and the nested structure of students within schools, the regression results were interpreted with caution and were not treated as definitive evidence of causal influence. It should also be noted that the use of simple linear regression in this study had methodological limitations because students were nested within schools, while the independent variable was measured at the teacher or school level. However, because the number of schools was limited to four, more advanced multilevel analysis could not be conducted. Therefore, the regression was used only as an exploratory statistical procedure.

C. RESULTS AND DISCUSSION

1. Results

Respondent Characteristics and Descriptive Data

The study involved 85 fourth-grade students from four elementary schools in Sekayam Subdistrict. The schools represented different environmental contexts, including remote, mixed rural-urban, and subdistrict-center school settings. Four fourth-grade homeroom teachers also completed the deep learning implementation questionnaire. The teacher-reported implementation score was treated as a contextual indicator of the classroom learning environment in each school, not as an individual student-level measure.

Table 1. Respondent Distribution and Main Descriptive Scores

No.	School	Deep Learning Implementation Score	Mean Student Learning Interest Score	Number of Students
1	SDN 20 Mabah	53	54	14
2	SDN 16 Kenaman	55	56	22
3	SDN 18 Entubah	50	53	17
4	SDN 01 Balaikarangan	54	53	32
	Total			85

Source: Processed from field research data, 2025.

The reported implementation scores of the deep learning approach ranged from 50 to 55 across the four schools, while the mean student learning interest scores ranged from 53 to 56. These descriptive results indicate relatively limited variation across schools in both teacher-reported deep learning implementation and students' learning interest. The limited variation in implementation scores is important to note because it may reduce the ability of the regression model to detect a statistically significant association. Since each implementation score was reported by one teacher in each school, the score was interpreted as a school-level contextual measure rather than an individual student-level score.

Instrument Validity and Reliability

The learning interest questionnaire was tested for validity using Pearson product-moment correlation and for reliability using Cronbach's alpha. The results are presented in Table 2.

Table 2. Validity and Reliability Results of the Learning Interest Questionnaire

Test	Result	Criterion	Interpretation
Item validity	Pearson correlation values ranged from 0.477 to 0.663; all items had Sig. < 0.001	Sig. < 0.05	All items were valid
Reliability	Cronbach's Alpha = 0.784 for 12 items	$\alpha > 0.70$	Reliable

Source: Processed from SPSS output based on field research data, 2025.

The validity test showed that all 12 items had significant item-total correlations, with Pearson correlation values ranging from 0.477 to 0.663 and significance values below 0.001. These results indicate that all items were valid for measuring students' learning interest. The reliability test produced a Cronbach's alpha value of 0.784, which exceeded the commonly accepted threshold of 0.70. Therefore, the learning interest questionnaire demonstrated acceptable internal consistency and was considered suitable for the subsequent analysis.

Assumption Test Results

Before conducting the regression analysis, residual normality and homogeneity tests were performed. The results are presented in Table 3.

Table 3. Assumption Test Results

Test	Statistical Basis	Result	Criterion	Interpretation
Residual normality	One-Sample Kolmogorov-Smirnov	Sig. = 0.065	Sig. > 0.05	Normally distributed
Homogeneity	Levene's test based on mean	Sig. = 0.213	Sig. > 0.05	Homogeneous
Homogeneity	Levene's test based on median	Sig. = 0.224	Sig. > 0.05	Homogeneous
Homogeneity	Levene's test based on median with adjusted df	Sig. = 0.227	Sig. > 0.05	Homogeneous
Homogeneity	Levene's test based on trimmed mean	Sig. = 0.201	Sig. > 0.05	Homogeneous

Source: Processed from SPSS output based on field research data, 2025.

The residual normality test produced a significance value of 0.065, which was greater than 0.05. This result indicates that the residuals were normally distributed. The homogeneity test also showed significance values above 0.05 across all bases of calculation, indicating that the variance of students' learning interest scores across school groups was homogeneous. These results suggest that the basic assumptions for the regression analysis were sufficiently met.

Simple Linear Regression Analysis

Exploratory simple linear regression was conducted to estimate whether the available data indicated a statistical tendency between teacher-reported implementation of the deep learning approach and students' learning interest. The results are presented in Table 4.

Table 4. Simple Linear Regression Results

Variable	B	Std. Error	Beta	t	Sig.
Constant	29.135	15.119		1.927	0.057
Deep learning implementation	0.463	0.284	0.177	1.635	0.106

Source: Processed from SPSS output based on field research data, 2025.

The regression coefficient for deep learning implementation was positive, with a B value of 0.463 and a standardized beta coefficient of 0.177, indicating a weak positive tendency. This indicates that higher reported implementation scores tended to correspond with higher student learning interest scores, although the strength of the association was weak. However, the significance value was 0.106, which was greater than 0.05. Therefore, the teacher-reported implementation of the deep learning approach was not significantly associated with students' learning interest in this sample.

Although the coefficient was positive, the association was weak and not statistically significant. Thus, the data did not provide sufficient statistical evidence to support the alternative hypothesis. Given that the independent variable was measured at the teacher or school level and involved only four teacher-reported implementation scores, the regression result should be interpreted cautiously. The finding does not provide sufficient statistical evidence to conclude that teacher-reported deep learning implementation was significantly associated with students' learning interest among fourth-grade elementary school students in Sekayam Subdistrict. Therefore, the result should be interpreted as an exploratory tendency rather than as evidence of a confirmed instructional effect.

2. Discussion

The findings of this study indicate that the teacher-reported implementation of the deep learning approach had a positive regression coefficient, but its association with students' learning interest was not statistically significant. This result suggests a weak positive tendency between higher reported implementation scores and higher student learning interest scores, although the available data did not provide sufficient statistical evidence to substantiate a significant association. This interpretation is consistent with the analytic focus of the study, which examined the relationship between classroom-level deep learning implementation and student-level learning interest rather than testing an experimental treatment. Therefore, the finding should not be read as evidence that deep learning has no pedagogical value, but it should also not be interpreted as evidence that deep learning implementation significantly increases students' learning interest. Instead, it indicates that, within the present sample and measurement structure, teacher-reported implementation of deep learning was not sufficiently associated with variation in students' learning interest.

The positive direction of the coefficient remains pedagogically plausible, although it should be interpreted cautiously. In educational discourse, deep learning is commonly associated with meaningful, mindful, and joyful learning, which may support reflective understanding, contextual relevance, and students' emotional engagement in the learning process (Azzahra & Jaya, 2025; Feri, 2025). Literature on deep learning in Indonesian education also suggests that this approach aligns with efforts to move classroom practice beyond rote learning toward more reflective, participatory, and student-centered learning experiences (Alim et al., 2025; Taqiyya et al., 2025). This literature helps explain why the regression coefficient in the present study moved in a positive direction, but it cannot

be used to claim that the relationship was statistically confirmed. However, these studies also suggest that the pedagogical promise of deep learning depends on the quality of implementation, teacher capacity, and the availability of supportive classroom conditions. Thus, the present finding is better understood as a cautious indication of a possible positive tendency rather than evidence of a statistically confirmed effect.

The absence of statistical significance may be related to the limited and uneven implementation of deep learning in actual classroom practice. Recent Indonesian studies suggest that deep learning is still being adapted in schools and that its implementation may be constrained by limited teacher training, inadequate facilities, rigid pedagogical routines, and uneven institutional support (Feri, 2025; Waloyo et al., 2026). Research on elementary school teachers' readiness similarly indicates that teachers may have positive perceptions of deep learning, yet still require additional training and workshops to translate the approach into consistent classroom practice (Ivan Ananta Luckita et al., 2025). These findings are relevant to the present study because the implementation of deep learning was measured through teacher reports. A high implementation score may reflect teachers' perceived use of meaningful, mindful, and joyful learning, but it may not fully capture the depth, consistency, or quality of actual classroom enactment. This may help explain why the association with students' learning interest was positive in direction but not statistically significant.

Students' learning interest is also likely shaped by motivational and relational factors beyond the reported implementation of a single instructional approach. Self-determination theory emphasizes that students' motivation is influenced by the fulfillment of autonomy, competence, and relatedness, which are strongly shaped by the social context of learning (Deci & Ryan, 2000). In the Indonesian classroom context, Maulana et al. (2016) found that teacher support for autonomy, competence, and relatedness was positively related to students' autonomous motivation. This suggests that learning interest may depend not only on the formal use of a deep learning approach, but also on how students experience teacher support, classroom interaction, feedback, and a sense of relevance in learning. Hattie and Timperley (2007) further argue that feedback can strongly influence learning, but its effectiveness depends on its type, timing, and the way it helps students understand their progress. Therefore, deep learning may contribute more strongly to learning interest when it is accompanied by autonomy-supportive teaching, constructive feedback, and emotionally supportive classroom interaction.

International evidence on active learning also supports a cautious reading of the present results. Freeman et al. (2014) showed through a large meta-analysis that active learning can improve student performance in science, engineering, and mathematics, while Deslauriers et al. (2019) demonstrated that students' perception of learning may not always correspond directly to actual learning gains in active learning settings. These studies are not identical to the present study because they focus on different educational contexts and learning outcomes. However, they show that student engagement, perceived learning, learning interest, and learning achievement are related but distinct constructs. This distinction is important for interpreting the present findings. A classroom may

contain active, meaningful, or joyful activities, yet students' reported interest may still vary depending on their perceived autonomy, confidence, peer interaction, prior learning disposition, and the relevance of learning tasks to their everyday experience.

The most important methodological consideration concerns the level of measurement. In this study, the independent variable was measured at the teacher or school level, while the dependent variable was measured at the student level. As a result, students within the same school shared the same deep learning implementation score. The analysis used simple linear regression, although the data had a nested structure in which students were grouped within schools. Methodological literature on educational data cautions that single-level regression may be limited when data are hierarchically structured, because students nested within classrooms or schools may share contextual characteristics that are not independent of one another (Van Dusen & Nissen, 2019). In the present study, this limitation was difficult to address because only four schools and four teacher-reported implementation scores were available. As a result, the model had limited variation in the independent variable, which may have reduced its ability to detect a statistically significant association and limited the strength of the statistical inference. This methodological issue also suggests that the relationship between deep learning implementation and students' learning interest should be interpreted as contingent on classroom conditions rather than as a direct or confirmed instructional effect. The positive but non-significant association may reflect the possibility that deep learning requires supportive pedagogical conditions to become meaningful for students, including teacher readiness, consistent classroom interaction, appropriate learning media, constructive feedback, and students' perceived autonomy. In this sense, the present finding is best understood as an indication that the reported implementation of deep learning alone was not sufficient to account for variation in students' learning interest across the sampled schools.

D. CONCLUSION

This study found a positive but statistically non-significant association between teacher-reported deep learning implementation and fourth-grade students' learning interest in elementary schools in Sekayam Subdistrict. The regression coefficient indicated a weak positive tendency, suggesting that higher reported implementation scores tended to correspond with higher students' learning interest. However, the significance value exceeded the 0.05 threshold, indicating that the available data did not provide sufficient statistical evidence to confirm a significant relationship. Therefore, the finding should be interpreted as an exploratory tendency rather than as evidence of a confirmed instructional effect.

This result needs to be understood in light of the study's methodological limitations. Deep learning implementation was measured through only four teacher-reported scores at the school level, whereas students' learning interest was measured at the individual level. This structure limited the variation of the independent variable and required cautious interpretation of the regression result. The findings suggest that deep

learning may remain pedagogically relevant, but its relationship with students' learning interest likely depends on the quality of classroom implementation, teacher readiness, learning media, feedback, classroom interaction, and students' motivational experiences. Future research should involve more schools and teachers, include student-level measures of perceived deep learning experiences, and consider classroom observation or more refined analytical designs to capture the relationship between instructional implementation and students' learning interest more accurately.

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