The Influence of Learning Communities, Teacher Pedagogical Competence, and School Readiness on the Implementation of the Deep Learning Approach in Elementary Schools in Cipondoh Subdistrict, Tangerang City

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.907000281

Received: 08 July 2025; Accepted: 15 July 2025; Published: 13 August 2025

ABSTRACT

This research investigates the influence of learning communities, teachers' pedagogical competence, and school readiness on the implementation of deep learning in elementary school "Sekolah Penggerak" (Transformational Elementary School Program) in Cipondoh District, Tangerang City. Amid Indonesia's educational transformation under the Merdeka Curriculum, deep learning—emphasizing critical thinking, conceptual understanding, and real-world application—has become a core instructional approach. However, its successful implementation relies not only on teacher qualification but also on collaborative professional culture and institutional support. Using a quantitative approach with multiple regression analysis, data were collected from elementary teachers and school principals through structured questionnaires. The findings revealed that learning communities, pedagogical competence, and school readiness each have a significant positive effect, both partially and simultaneously, on the implementation of deep learning. This study highlights the importance of holistic synergy among teacher collaboration, instructional capacity, and systemic readiness in fostering meaningful student learning experiences. The research offers strategic recommendations to bridge the gap between policy intentions and classroom practices, contributing to the sustainable transformation of primary education in Indonesia.

Keywords: deep learning, learning community, pedagogical competence, school readiness, "Sekolah Penggerak" transformational elementary school program

INTRODUCTION

Education is a crucial element in preparing quality human resources to face the challenges of the 21st century. The Indonesian government has responded to these demands through various strategic reforms, including the implementation of the *Merdeka Curriculum* and the *Sekolah Penggerak* (Transformational Elementary School Program) program. These initiatives aim to shift the learning paradigm toward Deep Learning—an approach that emphasizes meaningful understanding, conceptual connections, and the application of knowledge in real-world contexts [18], [29].

Deep Learning is grounded in several theoretical constructs. Ausubel's theory of meaningful learning emphasizes the importance of connecting new information to existing cognitive structures [2], [3], which remains relevant in modern educational contexts [7], [16]. In addition, the concept of mindful learning, introduced by Langer, promotes conscious awareness and flexibility in thought processes [20], [21], [41]. Complementing these is joyful learning, which highlights emotional engagement and collaboration as vital to inclusive education [19], [37].

Despite being supported by policy and theory, the implementation of Deep Learning in Indonesian schools remains uneven. Although the majority of elementary teachers meet minimum academic qualifications [5], the quality of learning is still hampered by conventional, teacher-centered approaches and limited pedagogical

competence [1], [24], [38]. In many cases, educators lack the training and support to design and deliver active, student-centered instruction [6], [28]. Furthermore, infrastructure, leadership, and collaboration mechanisms such as Professional Learning Communities (PLCs) are often underutilized or function only superficially [10], [17], [34].

School readiness is another key factor in ensuring the success of Deep Learning. This includes supportive policies, visionary leadership, sufficient learning resources, and the involvement of stakeholders such as parents and local communities [12], [26], [31]. A school that lacks readiness may struggle to provide the ecosystem necessary for engaging and meaningful learning. The digital divide also remains a challenge, with internet use among students often skewed toward entertainment rather than educational purposes [5], [30].

Given these conditions, this study seeks to examine the extent to which learning communities, pedagogical competence, and school readiness influence the implementation of Deep Learning in *Sekolah Penggerak* at the elementary level in Cipondoh District, Tangerang City. The findings are expected to offer empirical insights that contribute to bridging the gap between national education policies and classroom practices, while also providing strategic recommendations for stakeholders.

LITERATURE REVIEW

Theoretical Framework

The concept of Deep Learning in education is grounded in cognitive and constructivist learning theories. Ausubel's theory of meaningful verbal learning asserts that new information is best understood when linked to existing knowledge structures in the learner's mind [2], [3]. This view is reinforced by Novak and Gowin, who emphasized concept mapping as a means to visually connect and organize knowledge [25]. Such approaches facilitate not only information retention but also higher-order thinking skills essential in Deep Learning.

Mindful learning, as introduced by Langer, adds a metacognitive dimension by encouraging learners to engage consciously with content rather than relying on automatic processing [20], [21]. This mindset fosters cognitive flexibility and critical thinking, which are crucial for adapting to complex problems [41], [42]. Meanwhile, joyful learning, grounded in emotional and social learning theories, supports student engagement through positive affect, playfulness, and collaboration, especially in inclusive classrooms [19], [37].

Feriyanto and Anjariyah [11] propose a unified pedagogical model that integrates meaningful, mindful, and joyful learning—aligned with the Merdeka Curriculum's emphasis on student-centeredness and holistic development [18], [22]. These three approaches collectively underpin the philosophical foundation of Deep Learning in the Indonesian educational context.

Previous Research

Several studies have explored factors influencing the implementation of Deep Learning. Research by Bahri et al. [6] highlighted the importance of pedagogical and personal competence in shaping teacher effectiveness. Similarly, Uno [38] and Mulyasa [24] emphasized that planning, delivery, and reflective assessment are key aspects of pedagogical competence that enable meaningful instruction.

Professional Learning Communities (PLCs) have been widely recognized as instrumental in teacher development. DuFour et al. [10] describe PLCs as structured collaborations that focus on student outcomes through shared practice and data analysis. Hord [17] and Stoll et al. [34] show that successful PLCs are sustained by trust, shared goals, and leadership support.

On school readiness, studies by Ayuni et al. [4] and Prasetyo et al. [28] found that schools with clear instructional visions, adequate infrastructure, and active leadership are more likely to implement innovative pedagogies effectively. Fullan [12] and OECD [26] reinforce that leadership and stakeholder engagement are critical components of school transformation.

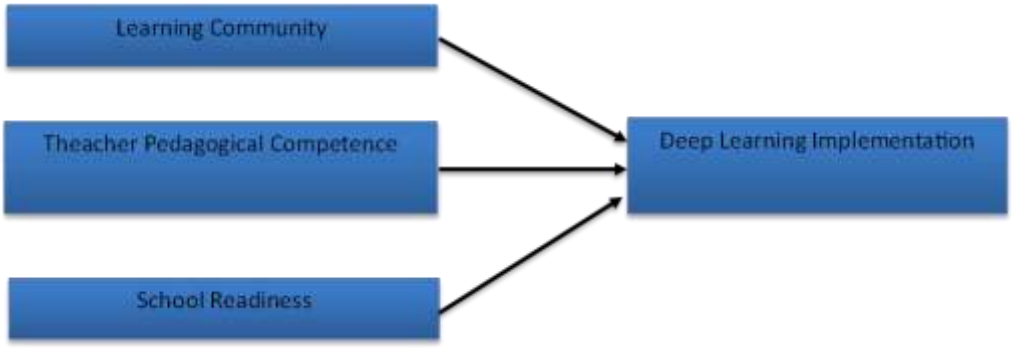
Gap Analysis

Although existing literature has acknowledged the roles of teacher competence, collaboration, and school readiness in improving learning outcomes, limited empirical studies have examined the **interrelationship** among these three factors within the framework of Deep Learning. Most research tends to isolate one variable—such as pedagogical competence [1], [6] or infrastructure readiness [4]—without considering their combined impact on instructional depth.

Additionally, studies on PLCs often focus on general teacher collaboration rather than linking them explicitly to Deep Learning implementation [34]. In the Indonesian context, research that integrates pedagogical theory, collaborative structures, and institutional support into a single model for evaluating Deep Learning implementation—particularly in *Sekolah Penggerak* at the elementary level—is scarce.

This study seeks to fill these gaps by analyzing how learning communities, pedagogical competence, and school readiness jointly influence the implementation of Deep Learning. The findings aim to provide holistic, evidence-based recommendations to improve both policy and practice in Indonesia's evolving education system. The conceptual framework developed for this study is illustrated in Figure 1.

Figure 1. Conceptual Model of the Influence of Learning Community, Pedagogical Competence, and School Readiness on Deep Learning Implementation



METHODOLOGY

This research employed a quantitative approach using a survey method. The population consisted of 103 teachers and school principals in elementary-level Sekolah Penggerak in Cipondoh District, Tangerang City. A purposive sampling technique was used to select 80 respondents. Data were collected using validated and reliable questionnaires measuring four variables: Learning Community, Pedagogical Competence, School Readiness, and Deep Learning implementation. Instrument validity and reliability were confirmed through preliminary testing. Classical assumption tests—normality, multicollinearity, heteroskedasticity, and linearity—were conducted prior to regression analysis. Data were analyzed using multiple linear regression to determine partial and simultaneous effects of the independent variables on the dependent variable.

RESULTS AND DISCUSSION

The results of the multiple linear regression analysis showed that all three independent variables—Learning Community (X_1), Pedagogical Competence (X_2), and School Readiness (X_3)—had significant positive effects on the implementation of Deep Learning (Y). The results can be summarized in Table 1.

Table 1. Multiple Linear Regression Results

Variable	Unstandardized Coefficient (B)	t-value	Sig. (p-value)	Interpretation
Learning Community (X_1)	0.339	3.588	0.001	Significant

Pedagogical Competence (X_2)	0.598	7.053	0.000	Highly Significant
School Readiness (X_3)	0.157	2.199	0.031	Significant
Constant	-5.763	-	-	-
F-test	-	156.554	0.000	Model Significant
R^2	0.860	-	-	Strong Model

The regression equation derived from the analysis is:

$Y = -5.763 + 0.339X_1 + 0.598X_2 + 0.157X_3$

Each coefficient indicates the magnitude and direction of the relationship between the predictor and the dependent variable. Pedagogical Competence (X_2) was found to be the most dominant factor, with a regression coefficient of 0.598, suggesting that an increase in teacher competence contributes most significantly to the effective implementation of Deep Learning. Learning Community (X_1) and School Readiness (X_3) also had positive coefficients, 0.339 and 0.157 respectively, confirming their contributive roles.

The F-test result showed an F-value of 156.554 with a significance level of $p = 0.000$, which is below 0.05. This confirms that the model is statistically significant and that the three predictors simultaneously influence Deep Learning implementation. The t-test further validated these findings: Learning Community ($t = 3.588$; $p = 0.001$), Pedagogical Competence ($t = 7.053$; $p = 0.000$), and School Readiness ($t = 2.199$; $p = 0.031$) each showed significant individual effects.

The coefficient of determination (R^2) was 0.860, indicating that 86% of the variance in Deep Learning implementation can be explained by the three independent variables. The remaining 14% may be attributed to other factors not examined in this study, such as student motivation, socio-cultural environment, or external educational policies.

These findings are consistent with the theoretical foundations of Deep Learning. The significant effect of Learning Communities supports the work of DuFour et al. [10] and Vygotsky [39], who emphasized collaborative professional dialogue and social interaction as key to knowledge construction. Similarly, the dominant influence of Pedagogical Competence aligns with previous studies highlighting the role of teacher quality in fostering meaningful learning [6], [9], [24]. School Readiness, although having the smallest coefficient, remains essential, echoing Fullan's and UNESCO's claims that organizational support and leadership are vital for instructional reform.

In summary, the study confirms that effective Deep Learning implementation requires not only skilled teachers but also a strong culture of collaboration and systemic school readiness. These three factors must operate synergistically to create an educational environment conducive to student-centered and inquiry-based learning.

CONCLUSION

This study concludes that Learning Community, Pedagogical Competence, and School Readiness each have a significant and positive impact on the implementation of Deep Learning in elementary-level Sekolah Penggerak. Among the three, Pedagogical Competence is the most influential factor. The results reinforce the need for an integrated approach in improving teacher capacity, promoting collaborative cultures, and ensuring institutional preparedness.

RECOMMENDATIONS

Educational stakeholders should prioritize ongoing professional development focused on Deep Learning pedagogies. Schools should strengthen learning communities by providing time, structure, and leadership

support. Moreover, school readiness must be improved through strategic investments in infrastructure, digital tools, and stakeholder engagement to sustain instructional transformation.

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