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Deep Learning: Implementation and Impact in Islamic Junior High Schools

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Abstract

This study aims to describe the implementation of deep learning strategies at the secondary level within an Islamic educational setting, specifically at SMP Islam Ar-Rahmah. A descriptive qualitative approach was employed to examine in depth the teaching–learning processes integrated with Islamic values and the school’s sociocultural context. Data were gathered through participatory observation, in-depth interviews, and the documentation of instructional materials. The findings reveal that deep learning was effectively realized through Problem-Based Learning (PBL) and Project-Based Learning (PjBL) in both the natural science (IPA) and social science (IPS) curricula. Students actively engaged in contextualized projects—such as the Socio Project Board initiative and water-filtration experiments—which fostered critical thinking, collaborative teamwork, and data-driven decision-making competencies. Moreover, the integration of religious programming and boarding-school activities contributed to the development of intrapersonal and interpersonal skills that align with the core values of Pancasila students. Nevertheless, challenges persist, particularly with respect to instructional design and the availability of teacher training. Consequently, systemic support from educational institutions and policymakers is necessary to bolster the sustainable and meaningful implementation of deep learning in Islamic schools.

Keywords: 21st-century competencies, contextual learning, deep learning, problem-based learning, project-based learning, socio-project board

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1. Introduction

The transformation of Indonesian education today is characterized by the strengthening of the “Merdeka Curriculum” policy, which emphasizes in-depth, learner-centered instruction. The deep-learning approach now promoted by the government seeks to prepare students as lifelong learners endowed with critical reasoning skills and noble character (Priantini & Suarni, 2022). The government underscores the importance of profound

conceptual understanding, reflective skills, and the capacity to solve real-world problems as the pillars of deep learning (Mulyani & Nurishlah, 2021). In line with this, the approach also supports the achievement of the six dimensions of the Pancasila Student Profile, namely independence, global diversity awareness, and mutual cooperation (Hanipah, 2023). The Pancasila Student Profile embodies lifelong learning for Indonesian learners, equipping them with global competencies

while guiding their behavior according to Pancasila values as the nation's foundational principles (Purnomo & Pratiwi, 2021).

However, the realization of these concepts continues to face implementation challenges, especially in secondary education institutions such as Islamic junior high schools (SMPs). Limited teacher resources, schools' unpreparedness in designing authentic assessments, and the lack of integration of religious values within the deep-learning framework represent the primary obstacles in Islamic schools (Rozak & Az-Ziyadah, 2021). Yet, deep learning holds considerable potential for embedding Islamic values through contextualized instruction that engages students' affective and spiritual dimensions. Unfortunately, most previous research has focused predominantly on technology use and data analytics, without exploring how this instructional model is executed humanistically and rooted in the local values of Islamic schools. This has resulted in a significant research gap between deep-learning theory and its application within Indonesia's Islamic educational system. Therefore, a contextual, field-based study centered on actual practices in Islamic schools is urgently needed.

On the other hand, a school such as SMP Islam Ar-Rahmah with its integrative vision of scientific knowledge and Islamic values offers an ideal setting to examine the real-world implementation of deep learning. The school's uniqueness lies in a pedagogical approach that not only stresses academic achievement but also cultivates Islamic character in students (Subroto et al., 2023). Character development in education requires focused attention to prevent its erosion by the changing times (Pratiwi et al., 2021; Purnomo et al., 2022; Purnomo & Wahyudi, 2020). Given the impetus of national policy and the school's internal readiness, it is crucial to

document and analyze teachers' strategies for enacting deep learning in the classroom. This study also presents an opportunity to trace the process of curricular adaptation and lesson planning that align with students' religious contexts (Hattarina et al., 2022). Such findings are exceedingly rare and have the potential to enrich the Indonesian Islamic education literature in a substantive way.

The novelty of this research lies in two critical aspects. First, it foregrounds the dimension of transformational pedagogy rooted in Islamic principles within the deep-learning framework, a topic scarcely explored at the junior high level (Asbari et al., 2023). Second, the study emphasizes the integration of moral-ethical (akhlāq) and monotheistic (tauḥīd) values into teaching strategies that demand students' critical and creative reasoning, an approach still uncommon in academic discourse. While studies such as Hanipah (2023) tend to address technology integration and assessment in deep learning, the present research delves deeper into the teacher's role as both moral and intellectual agent. Consequently, this study not only reinforces the empirical base but also offers a model of good practice for other Islamic educational institutions.

The primary objective of this research is to provide an in-depth description of the deep-learning implementation process at SMP Islam Ar-Rahmah and to analyze its impact on student engagement, learning outcomes, and the formation of religious character. The study focuses on classroom dynamics and the learning interactions that occur between teachers and students during instruction. It also aims to delineate the challenges and strategies teachers employ to align curricular goals with the school's socio-religious context. These objectives correspond with the current educational imperative to develop

learning models that are not only effective but also value-laden. Employing a descriptive-qualitative approach, this research is expected to yield strong contextual insights.

The benefits of this study can be categorized into theoretical and practical contributions. Theoretically, it enriches the scant literature on deep learning in Islamic schools. Practically, it provides strategic guidance for teachers and school leaders in developing learning approaches that directly impact students' cognitive and moral abilities. Additionally, the findings may inform policymakers in adapting deep-learning policies to be more responsive to the characteristics of faith-based educational institutions. Equally important, teacher-training institutes (LPTKs) can utilize the results as a basis for designing contextualized professional development programs. Thus, the impact of this research has the potential to span multiple levels of education, from classroom practice to policy formulation.

In light of the foregoing, the investigation of deep-learning implementation at SMP Islam Ar-Rahmah is not only relevant but also urgent. This study is expected to make a tangible contribution to strengthening national education policy, particularly in the development of a transformative curriculum rooted in character and spirituality. In the long term, the instructional model emerging from this research can be replicated in other schools with similar contexts. Such an endeavor represents a modest yet strategic step toward cultivating Indonesian learners who are holistically developed cognitively, affectively, and spiritually. Therefore, this research constitutes a concrete manifestation of synergy between national education policy and the grassroots reality of Islamic schooling.

2. Method

This study employs a descriptive qualitative approach to gain an in-depth understanding of the process by which deep learning is implemented at SMP Islam Ar-Rahmah. This approach was selected because it enables the researcher to holistically and thoroughly explore subjective experiences, classroom practices, and the school's religious-cultural context. The researcher serves as the primary instrument in data collection, utilizing participant observation, in-depth interviews, and document analysis of instructional materials and class records. Interviews were conducted with subject teachers and eighth-grade students, purposively selected based on their active involvement in the learning process. Data validity was strengthened through source and method triangulation, as well as member checking to ensure the accuracy of the researcher's interpretations ([Hanipah, 2023](#)).

Data were analyzed according to the Miles, Huberman, and Saldaña model, which comprises data reduction, data display, and conclusion drawing or verification ([Subroto et al., 2023](#)). During data reduction, information relevant to the research focus was sorted and then mapped into themes emerging from observations and interviews. Data were displayed in the form of descriptive narratives and verbatim quotations that reflect the realities of the field. Finally, conclusions were drawn inductively, taking into account the social context and prevailing Islamic values within the school environment. This method is particularly well-suited for exploring the value-based dynamics of learning in the implementation of a transformative curriculum, an area that remains under-investigated in Islamic secondary schools ([Rozak & Az-Ziyadah, 2021](#)).

3. Result and Discussion

This study yields critical findings regarding the implementation of deep learning approaches at SMP Islam Ar-Rahmah, encompassing pedagogical, spiritual, social, and sustainability dimensions. Data analysis was conducted through classroom observations, in-depth interviews, and documentation of learning processes. To present results systematically, the discussion is organized into thematic subsections aligned with research foci, each supplemented with data visualizations to reinforce empirical interpretations of deep learning practices in this Islamic educational setting.

a. Integration of PBL and PjBL Strategies in Thematic Instruction

Deep learning implementation commenced with integrating two complementary constructivist approaches: Problem-Based Learning (PBL) and Project-Based Learning (PjBL), particularly in Science (IPA) and Social Studies (IPS). PBL

stimulated students to confront and solve authentic problems drawn from local contexts. Through inquiry and open discussions, students developed critical thinking, analytical skills, and reflective capacities regarding daily life issues (Hmelo-Silver, 2004), fostering active conceptual understanding rather than passive knowledge reception.

PjBL provided opportunities for collaborative teamwork on medium-to-long-term projects with tangible outcomes. This approach cultivated group collaboration, communication, responsibility, and experiential understanding of complex contextual tasks (Thomas, 2000; Rahayu et al., 2025). The process emphasized active student engagement in knowledge construction alongside academic achievement. Integrating both strategies created dynamic, context-rich learning that advances deep learning's core objective: developing critically reflective, creative learners capable of knowledge transfer to real-world situations.

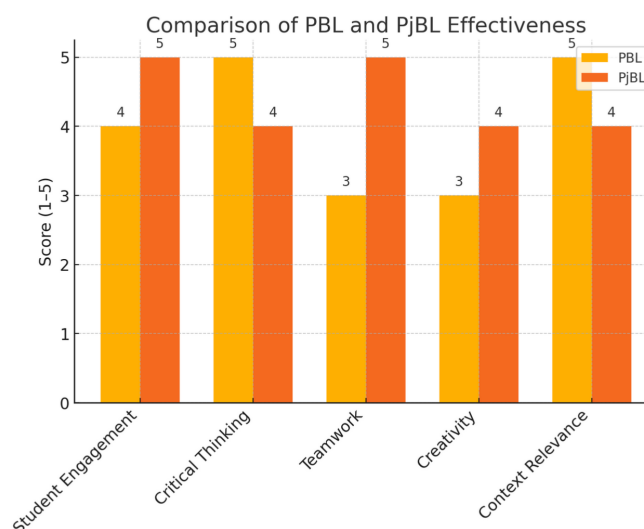


Figure 1. Comparative Scores of PBL and PjBL Effectiveness Across Five Learning Dimensions

Evaluation results (Figure 1) indicate distinct strengths of each approach. PBL demonstrated higher efficacy in enhancing critical

thinking and contextual relevance, evidenced by students' profound problem analysis and real-world connections. Conversely, PjBL

excelled in student engagement and teamwork, reflected in active participation during collaborative projects. These findings align with prior research (Jannah et al., 2024; Krajcik & Blumenfeld, 2006), confirming that combined PBL-PjBL implementation optimally builds academically rigorous, reflective, and meaningful learning experiences, holistically developing 21st-century competencies.

b. Contextual Projects and Social Competency Development in Social Studies

In IPS, deep learning was operationalized through the thematic "Socio Project Board," challenging students to explore social inequality in familial, communal, and societal

contexts. Students conducted field observations, interviewed local residents and community figures, and performed qualitative data analysis. Findings were synthesized into visual narratives using posters, infographics, and presentations (Larmer et al., 2015).

Beyond academic exercise, this project cultivated critical thinking through issue analysis and reflective thinking regarding inequality's societal impacts. Simultaneously, it nurtured social empathy—understanding others' lived experiences—and persuasive public communication (Bell, 2010; Trilling & Fadel, 2009). This aligns with deep learning's aim to develop cognitive, social, and civic awareness, fostering active citizenship and social responsibility.

Table 1. Impact of "Socio Project Board" on Students' Social Competencies

Aspect	Indicator	Mean Score (1–5)
Critical Thinking	Identifying social issues and formulating solutions	4.4
Reflective Thinking	Understanding societal impacts of inequality	4.2
Social Empathy	Perspective-taking among affected parties	4.5
Public Communication	Effective oral/visual presentation of findings	4.3
Civic Awareness	Demonstrating concern for local social injustice	4.6

Data (Table 1) confirm significant enhancement of social competencies, particularly civic awareness, social empathy, and critical thinking. High mean scores across all dimensions demonstrate the efficacy of project-based contextual learning in shaping reflective, empathetic, and communicative character. These findings validate deep learning's effectiveness in Islamic school IPS instruction.

c. Science Learning through Environmental Experiments

In IPA, deep learning was implemented via a water filtration experiment addressing school-adjacent water pollution. Students applied full scientific methodology, including

problem identification, technical solution design, and prototype testing, developing scientific inquiry skills such as hypothesis formulation, experimentation, data recording, and evidence-based conclusions (Saavedra & Opfer, 2012; Hmelo-Silver, 2004).

The project fostered creativity in designing functional tools from simple materials and collaboration during group evaluations. Data-driven decision-making proved crucial for optimizing filtration efficiency. However, challenges included limited exploratory learning modules and inconsistent systemic support for project-based learning (Kemendikbudristek, 2022). Strengthening teacher training and providing structured teaching resources remain essential for broader integration.

Table 2. Impact of Water Filtration Project on Science Competencies

Competency	Indicator	Mean (1–5)	Category
Scientific Inquiry	Hypothesis-driven experimentation & analysis	4.3	Good
Creativity	Innovative design using simple materials	4.5	Excellent
Collaboration	Active teamwork during experiments	4.4	Excellent
Data-Driven Decision-Making	Evaluating/modifying designs based on tests	4.1	Good
Science Concept Mastery	Applying concepts in real contexts	4.2	Good

Assessment of 30 students (Table 2) indicates positive impacts across five deep learning competencies. Scientific inquiry (4.3) reflects systematic implementation of scientific processes. Creativity scored highest (4.5), confirming effectiveness in technical innovation. Collaboration (4.4) demonstrates strong teamwork. Data-driven decisions (4.1) and conceptual mastery (4.2) show applied science understanding. The project holistically integrates cognitive, procedural, and 21st-century skills but requires exploratory modules and sustained teacher development for replicability.

d. Islamic Programs in Cultivating Religious Character

Deep learning at SMP Islam Ar-Rahmah consistently integrates Islamic values into students' moral-spiritual foundation. Structured daily religious programs, including congregational prayers, Dhuha prayers, classical

Islamic texts study (e.g., Safinatun Najah), and nightly self-reflection (muhasabah), form the school's core ethos (Abidin et al., 2024; Ma'arif, 2022). These activities transcend ritualistic practice, fostering contemplation of worship's relevance to real-world decisions, behavior, and social interactions.

Religious activities shape character by nurturing spiritual awareness, moral responsibility, and self-discipline. Teachers serve as mentors and role models in cultivating an inclusive Islamic school culture. The program strengthens intrapersonal competencies such as self-awareness and self-regulation, alongside interpersonal competencies including empathy and ethical communication, aligning with deep character education frameworks (Lickona, 2004; Zins et al., 2004). Thus, deep learning here develops intellectually capable, ethically grounded learners with spiritual integrity.

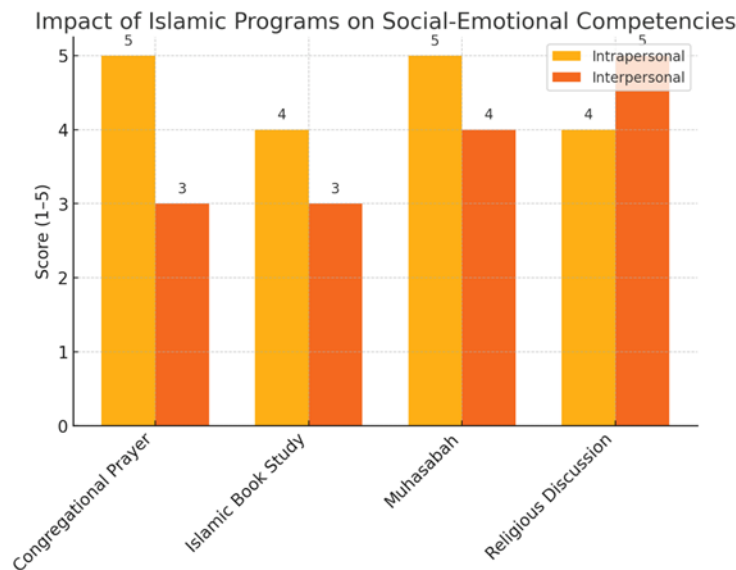


Figure 2. Impact of Islamic Programs on Intrapersonal and Interpersonal Competencies

As shown in Figure 2, sustained religious programs significantly enhance students' intrapersonal competencies like self-awareness and personal accountability, alongside interpersonal competencies such as empathy and effective social communication. Findings confirm that religious activities, including nightly reflection, theological discussions, and text study, strengthen humanitarian values and communal bonds, consistent with deep character education principles integrating cognitive, emotional, and moral development (Lickona, 2004; Zins et al., 2004).

e. Implementation Challenges of Deep Learning in Islamic Schools

Despite positive impacts on cognitive, affective, and spiritual development, deep

learning implementation faces structural and technical challenges. Teacher interviews (Figure 3) reveal inadequate professional training as the primary barrier. Many teachers lack comprehensive training in designing inquiry-based, reflective, and contextual problem-solving activities.

Additional challenges include difficulties in developing holistic reflective and formative assessments, as current evaluations remain conventional and product-oriented rather than process-focused. Critically, insufficient institutional policy support and administrative backing hinder consistent implementation. The absence of clear regulations, technical guidelines, or incentive systems creates uneven adoption, echoing Darling-Hammond et al. (2020) emphasis on systemic support for sustainable pedagogical transformation.

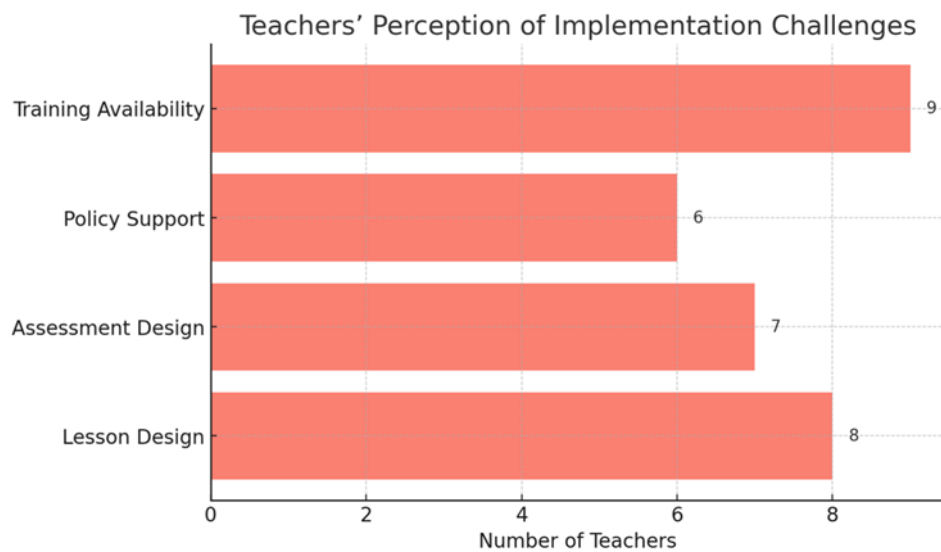


Figure 3. Teachers' Perceptions of Deep Learning Implementation Challenges

f. Sustainability Education through Agribusiness Projects

The school agribusiness project exemplifies deep learning aligned with Education for Sustainable Development (ESD). Students engaged directly in crop cultivation, including planting, maintenance, and harvest management, developing practical sustainability competencies vital for 21st-century challenges (Sterling, 2010).

Active participation fostered responsibility through consistent plant care,

perseverance in managing growth cycles, and environmental awareness regarding biodiversity conservation. Figure 4 shows significant improvement in sustainability competencies post-project, corroborating Barth et al. (2007) and Fullan & Langworthy (2014) on deep learning's role in developing systemic thinking, collaboration, and long-term solution orientation. This project exemplifies meaningful learning integrated with local contexts and future needs.



Figure 4. Impact of Agribusiness Project on Sustainability Competencies

These findings affirm that deep learning can be contextually and spiritually implemented in Islamic schools such as SMP Islam Ar-Rahmah. Integrating PBL and PjBL in thematic instruction successfully enhanced student engagement, critical thinking, and meaningful learning (Suharti et al., 2024). Furthermore, Islamic values reinforced through daily religious programs and socio-ecological projects like agribusiness demonstrate deep learning's capacity to address affective, moral, and sustainability dimensions beyond cognitive development (Laksmiwati et al., 2024).

However, implementation remains suboptimal due to insufficient teacher training, limited understanding of reflective pedagogy design, and inconsistent institutional policy support. Sustainable deep learning in Islamic education requires systemic backing through clear institutional policies from foundations or school leadership, complemented by ongoing teacher professional development (Timperley et al., 2007; Kemendikbudristek, 2023). Without such support, replicating this model across Islamic educational contexts will prove challenging.

4. Conclusion

This study demonstrates that a deep-learning pedagogical framework can be implemented both effectively and contextually within an Islamic school setting, specifically at SMP Islam Ar-Rahmah, through the integration of Problem-Based Learning (PBL) and Project-Based Learning (PjBL) strategies. Thematic instruction in the Natural and Social Sciences disciplines fosters the development of critical, reflective, and collaborative thinking skills, as well as data-driven decision-making abilities. Moreover, the incorporation of Islamic values via daily religious programs and a

boarding-school environment cultivates students' spiritual and social character holistically. Sustainability-focused projects, such as the school's agro-business initiatives, further reinforce twenty-first-century life skills oriented toward environmental stewardship and self-reliance. Nevertheless, the deep-learning implementation faces challenges, including limited teacher training, a paucity of reflective assessment designs, and the absence of internal policies that fully endorse transformative learning. Consequently, the success of this deep-learning approach in an Islamic school context depends on systemic support in the form of progressive institutional policies and ongoing professional development programs for educators. With such support, this instructional model can be replicated and expanded more broadly, contributing to the cultivation of Pancasila-student profiles that are comprehensive in their cognitive, affective, spiritual, and social dimensions.

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