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Integrated deep learning, growth mindset, and spirituality training for elementary teachers

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ABSTRACT

This community service program aimed to strengthen the pedagogical capacity of elementary-school teachers in the Rakit Kulim teacher cluster, Indragiri Hulu Regency, Riau Province, through an integrated training program on Deep Learning (*Pembelajaran Mendalam*), growth mindset, and teacher spirituality to foster a favorable classroom climate. Implemented on 22–23 August 2025 with 40 participants, the program combined short concept briefings, collaborative lesson-design clinics, microteaching, and reflective coaching. Participants developed lesson designs that are mindful, meaningful, and joyful, grounded in holistic development (mind–heart–sense–body) and a staged learning sequence (understanding, applying, and reflecting). Growth mindset practices were incorporated to encourage iterative improvement, while spirituality-informed culture building emphasized respectful language, empathy, and consistent classroom agreements. Key outputs included contextual topic maps, draft lesson designs aligned with the Deep Learning framework, an assessment portfolio (assessment as learning, for learning, and of learning), and a cluster-level follow-up plan for peer mentoring. Overall, the integrated approach suggests that teachers are better prepared to implement deeper, more humanizing learning in elementary classrooms.

Keywords: deep learning; elementary-school teachers; growth mindset; professional development; teacher spirituality

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Introduction

Elementary education quality is increasingly expected to move beyond the acquisition of isolated facts toward meaningful understanding, authentic application of knowledge, and sustained reflective habits. Reviews indicate that inquiry, problem, and project-based approaches can promote

conceptual understanding and higher-order thinking when they are designed with adequate guidance and scaffolding (Hmelo-Silver, 2004; Furtak et al., 2012; Kokotsaki et al., 2016).

In this context, Deep Learning (*Pembelajaran Mendalam*; PM) is positioned as a learning strategy that emphasizes active student engagement, relevance to learners' lives, and meaning-making through reasoning. PM is not understood as "more difficult learning"; instead, it is learning that intentionally supports students in understanding, applying, and reflecting on both products and processes in a staged manner.

The quality of PM is powerfully shaped by the assessment design that guides learning. Formative assessment literature highlights that timely feedback, opportunities for self-assessment, and the use of evidence of learning to adjust instruction have substantial effects on learning outcomes (Black & Wiliam, 1998, 2009; Hattie & Timperley, 2007). Implementing PM requires strengthening teachers' capacity through sustained professional development. Effective professional learning typically demonstrates clear content focus, active learning opportunities, collaboration, feedback, and structured follow-up (Desimone, 2009). Changes in classroom practice also often occur through cycles of trying out new strategies, observing their effects, and reflecting—ultimately reshaping teachers' knowledge and beliefs (Guskey, 2002; Clarke & Hollingsworth, 2002).

Professional learning communities are therefore relevant because they provide systematic spaces for sharing practice, collective reflection, and incremental innovation. Research on professional learning communities suggests that collaboration, when deliberately structured and evidence-oriented, can improve instructional practice and student outcomes (Stoll et al., 2006; Vescio et al., 2008).

Beyond pedagogical knowledge, teachers' psychological factors influence their willingness to innovate. The growth mindset framework emphasizes that abilities can be developed through strategies and effort, and that failure can be viewed as a learning opportunity (Dweck & Leggett, 1988; Yeager & Dweck, 2012). While meta-analytic findings indicate that mindset interventions often yield minor and context-dependent effects, benefits are more evident among learners at risk and those from lower socioeconomic contexts (Sisk et al., 2018; Paunesku et al., 2015; Claro et al., 2016).

At the classroom level, successful PM also depends on a safe and supportive learning climate. Positive teacher–student relationships are associated with engagement and achievement (Roorda et al., 2011), and a healthy school/classroom climate is associated with academic outcomes and student well-being (Wang & Degol, 2016). Teachers' social-emotional competence and well-being contribute to classroom management and the quality of classroom interactions (Jennings & Greenberg, 2009). Mindfulness-based approaches are also reported to be promising for supporting self-regulation and well-being, which are central to sustaining a constructive classroom climate (Zenner et al., 2014; Jennings, 2015).

In Rakit Kulim Subdistrict, Indragiri Hulu Regency, teachers in the elementary-school cluster reported a need to strengthen their understanding of PM, to design implementable learning sequences, and to align assessment with the understanding–applying–reflecting progression. Constraints such as limited instructional time, uneven learning resources, and heterogeneous student readiness require designs that are realistic yet meaningful. In response, the community service team delivered an integrated PM training program that combined growth mindset and teacher spirituality strengthening for the Rakit Kulim teacher cluster. The program was conducted on 22–23 August 2025 with 40 participants.

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The objectives of the program were to: (1) improve teachers' understanding of PM principles and learning progression; (2) train teachers to design PM learning experiences (understanding–applying–reflecting) along with aligned assessment; (3) strengthen teachers' growth mindset and spirituality-informed practices as foundations for a favorable classroom climate; and (4) develop a cluster/KKG-based follow-up plan for classroom trials and collective reflection across schools.

Literature Review

Theoretically, PM aligns with approaches that position students as active meaning-makers through cognitive and social activity. Problem-based and project-based learning emphasize authentic problems, investigation, collaboration, and presentation as mechanisms for more profound understanding (Hmelo-Silver, 2004; Kokotsaki et al., 2016). In science education, meta-analytic evidence indicates that inquiry is effective when learners receive adequate support and scaffolding (Furtak et al., 2012). The understanding–applying–reflecting cycle can be interpreted as a staged design that moves from concept construction to authentic performance, followed by reflection to improve learning strategies. Such a design requires continuous evidence of learning so that teachers can adapt support to students' needs (Black & Wiliam, 2009).

Within the PM ecosystem, assessment is not merely a mechanism to measure results; it is integral to learning. Principles of assessment for/as learning emphasize formative questioning, actionable feedback, and student involvement in self-assessment (Black & Wiliam, 1998, 2009). Clear feedback about goals, progress, and next steps contributes meaningfully to achievement (Hattie & Timperley, 2007).

Growth mindset functions as a psychological lens that supports persistence, especially when learners face difficulty. The framework emphasizes process messages about strategies, effort, and improvement rather than fixed-ability labels (Dweck & Leggett, 1988; Yeager & Dweck, 2012). However, effectiveness depends on context, implementation quality, and support for the learning environment (Sisk et al., 2018).

Affective dimensions also matter. Warm, low-conflict teacher–student relationships are associated with engagement and achievement (Roorda et al., 2011). At the system level, safe, supportive, and academically oriented climates contribute to both academic and psychological outcomes (Wang & Degol, 2016). The prosocial classroom model highlights how teachers' social-emotional competence and well-being shape classroom management and interaction quality (Jennings & Greenberg, 2009).

Strengthening PM among teachers, therefore, benefits from professional development designs that prioritize active practice, collaboration, and follow-up (Desimone, 2009). Professional learning communities provide a structure for evidence-informed collective reflection and sustained peer learning (Stoll et al., 2006; Vescio et al., 2008), consistent with dynamic, context-based models of teacher growth (Clarke & Hollingsworth, 2002; Guskey, 2002).

Methods

The program used a participatory training and mentoring design (workshop–clinic–coaching) for clustered elementary school teachers in Rakit Kulim Subdistrict, Indragiri Hulu Regency, Riau Province. It was conducted over two days (22–23 August 2025) with 40 participants. A participatory

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approach was adopted so that teachers not only received conceptual input but also produced lesson plans ready for classroom trials.

The preparation phase included: (1) coordination with the cluster leader and school principals; (2) needs mapping through an initial discussion and a short questionnaire; (3) development of training materials, worksheets, and exemplars; and (4) preparation of small-group work procedures and peer-feedback mechanisms. Needs mapping focused on teachers' initial understanding of PM, standard instructional practices, and implementation constraints, including time, students' literacy variation, learning resources, and technology access.

The implementation phase comprised five core sessions. Session 1 focused on PM orientation (rationale, principles, graduate profile dimensions, and the teacher's role). Session 2 introduced the PM design framework (four design elements and the understanding–applying–reflecting sequence) with examples suitable for elementary learners. Session 3 provided a lesson-design clinic using worksheets to select contextual topics, map targeted graduate profile dimensions, formulate learning objectives, structure activities by phase, and select assessment forms. Session 4 involved limited microteaching to rehearse lesson segments and receive peer feedback. Session 5 focused on strengthening growth mindset and teacher spirituality, followed by developing a cluster-level follow-up plan.

The program outputs targeted: (a) contextual PM-based lesson plan drafts (lesson plan/module) for classroom trials, and (b) an assessment portfolio comprising formative and summative instruments (rubrics, observation checklists, reflective journals, and simple feedback forms). Outputs were developed collaboratively in small groups (4–6 teachers) to promote peer learning and cross-school exchange of ideas.

Evaluation combined product- and process-based approaches. Product evaluation examined alignment among objectives and graduate profile dimensions, consistency with mindful, meaningful, joyful principles, coherence of the understanding–applying–reflecting progression, and alignment of assessment plans. Process evaluation used facilitator notes, participants' written reflections, and peer feedback. The follow-up plan included agreements on peer mentoring, practice-sharing schedules, and a commitment to trial at least one PM lesson design in each teacher's classroom.

Table 1. Training sessions and primary outputs

Session	Main content	Outputs
1	PM orientation (principles, graduate profile, teacher roles)	Shared understanding and needs map
2	PM design framework (four design elements; learning progression)	Contextual topic map and objectives
3	Lesson design clinic (understanding–applying–reflecting; assessment)	Draft lesson plans and assessment portfolio
4	Microteaching, peer feedback, purposeful digital use	Revised drafts and implementation notes
5	Growth mindset, spirituality, and cluster follow-up planning	Action plan and peer mentoring scheme

Results

Over the two-day program (22–23 August 2025), involving 40 elementary-school teachers in the Rakit Kulim cluster, three main outputs were produced: (1) participants' conceptual

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understanding of Deep Learning (PM) and the teacher's role as an activator, collaborator, and culture builder was strengthened; (2) draft PM-based lesson plans/modules incorporating the staged sequence of understanding–applying–reflecting were developed; and (3) an assessment portfolio (formative and summative), along with a cluster-level follow-up plan for peer mentoring and practice sharing, was prepared.

Figure 1. Training for teachers

During the design clinic, groups developed contextual topics grounded in local realities around schools, such as maintaining the river/ditch ecosystem, balanced nutrition, and orderly behavior in school. For each topic, groups prioritized relevant graduate profile dimensions, formulated learning objectives, and structured learning activities by phase. The assessment portfolios included instruments to monitor learning processes and outcomes, such as product/project rubrics, collaboration observation checklists, prompt questions for checking understanding, simple feedback sheets, and student reflective journal templates. An example mapping for the river/ditch ecosystem topic is presented in Table 2.

Table 2. Example learning progression mapping (river/ditch ecosystem topic)

Phase	Core activities	Evidence of learning & assessment
Understanding	Observation, reading texts; concept discussion; concept map	Formative prompts; observation notes; concept map (for learning)
Applying	Action project; poster/video products; group work	Product rubric; collaboration observation (of & for learning)
Reflecting	Presentation, peer feedback, reflective journal, and improvement plan	Reflective journal; self/peer assessment (as learning)

Through limited microteaching, participants rehearsed selected lesson segments and received peer feedback to refine objectives, driving questions, discussion facilitation, and time allocation. At

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the end of the program, the cluster agreed to trial at least one PM lesson design in each classroom, supported by a peer mentoring mechanism and practice sharing through the KKG/cluster forum.

Figure 2. The teacher provides suggestions and feedback

Challenges identified during discussions included limited instructional time, variation in students' literacy readiness, and uneven availability of learning resources and devices. Agreed mitigation strategies included starting small and incrementally, leveraging local learning resources, and applying simple differentiation by offering product options and additional supports for students who need them.

Discussion

The workshop–clinic–coaching model aligns with evidence that professional development is more impactful when it maintains a strong content focus, incorporates active learning, aligns with teachers' work contexts, promotes collective participation, and provides sufficient duration (Garet et al., 2001; Desimone, 2009). These features supported teachers in translating PM concepts into practical instructional decisions relevant to cluster realities.

From the perspective of instructional change, outputs such as draft lesson materials, microteaching, peer feedback, and classroom-trial planning indicate a professional learning cycle. This is important because changes in teaching are rarely linear; they require opportunities to try strategies, examine evidence, reflect, and revise. Evidence-informed reflection helps teachers treat constraints as information for improvement rather than reasons to abandon innovation (Guskey, 2002; Clarke & Hollingsworth, 2002).

The understanding–applying–reflecting sequence developed by participants reinforces PM's intention to build conceptual understanding before moving toward authentic performance. Research on problem-based/project-based and inquiry learning suggests deeper understanding is more likely

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when students work on meaningful problems, collaborate, and receive adequate scaffolding. The design clinic, therefore, helped teachers balance student autonomy with instructional support (Hmelo-Silver, 2004; Kokotsaki et al., 2016; Furtak et al., 2012).

Strengthening the assessment portfolio supports PM because high-quality formative feedback plays a central role in learning improvement. The rubrics, checklists, and reflective journals produced by participants can clarify success criteria, guide revision, and foster self-regulated learning. This is consistent with evidence that formative assessment and specific, actionable feedback contribute to achievement and help learners identify next steps (Black & Wiliam, 1998, 2009; Hattie & Timperley, 2007; Nicol & Macfarlane-Dick, 2006).

Growth mindset strengthening was positioned as a psychological foundation for sustained PM implementation. Mindset theory explains how beliefs about ability shape responses to challenge, failure, and feedback. Empirical evidence suggests that mindset interventions can influence achievement, though effect sizes vary by context and fidelity. Accordingly, emphasizing process-oriented feedback and iterative improvement was important for sustaining instructional innovation (Dweck & Leggett, 1988; Yeager & Dweck, 2012; Paunesku et al., 2015; Claro et al., 2016; Sisk et al., 2018).

The spirituality and positive classroom climate component reinforced PM's "joyful" principle. Research indicates that teacher–student relationships and classroom climate are associated with engagement, emotion regulation, and achievement. The prosocial classroom framework positions teachers' social-emotional competence and well-being as prerequisites for effective classroom management and supportive interactions. Mindfulness-oriented practices also show promise for psychological outcomes related to self-regulation and well-being, supporting a constructive learning climate (Jennings & Greenberg, 2009; Roorda et al., 2011; Wang & Degol, 2016; Zenner et al., 2014; Jennings, 2015).

Finally, the cluster/KKG-based follow-up through peer mentoring and practice sharing is essential for sustainability. Studies on professional learning communities indicate that structured, evidence-based collaboration can support improvements in teaching practice. Regarding digital use, meta-analytic findings remind us that technology should be applied purposefully; pedagogical design remains the primary driver of learning impact (Stoll et al., 2006; Vescio et al., 2008; Tamim et al., 2011).

Conclusion and Implications

This community service program achieved its stated objectives. First, teachers' understanding of Deep Learning (PM) strengthened, including the mindful, meaningful, and joyful principles, the graduate profile dimensions, and the staged learning sequence of understanding–applying–reflecting. Second, participants produced contextual PM-based lesson plan/module drafts, including examples of activity mapping and evidence of learning. Third, participants developed an assessment portfolio (formative and summative) and strengthened commitments to growth mindset and spirituality-informed practices to cultivate safe, supportive, and learning-oriented classroom climates. As a practical implication, the cluster/KKG is encouraged to implement a consistent but straightforward follow-up cycle: trial at least one PM lesson design in class, collect evidence (student work samples, rubrics, reflective notes), and discuss findings in the cluster forum for collective refinement. Lightweight peer mentoring and peer observation can support teachers who need additional assistance and sustain PM implementation across elementary schools.

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Limitation

This report focuses on program implementation and outputs, including lesson design products and a follow-up plan. It does not yet include long-term classroom observations or quantitative measurement of students' learning outcomes following implementation. Future cycles are recommended to include classroom visits, analysis of student learning artifacts, and simple pretest–posttest measures to more robustly examine changes in teachers' understanding and planning skills.

Credit authorship contribution statement

All authors contributed to the conceptualization and implementation of the program, data collection, analysis, and manuscript preparation. All authors approved the final manuscript.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethical Declaration

All participants provided informed consent before their involvement in the program. They were informed about the program's purpose, procedures, and their right to withdraw at any time without consequence.

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