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Short Communication

Strengthening Teacher Competence Through The Integration of Deep Learning Models and Galatama Activities at MAN Insan Scholar West Halmahera

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This article contributes to:

Abstract. This community service program aims to enhance teachers' pedagogical, collaborative, and reflective competencies through the integration of the Deep Learning model and Galatama activities at MAN Insan Cendekia Halmahera Barat. The program employed the Participatory Action Research (PAR) approach, which consists of four stages: planning, acting, observing, and reflecting. Twenty subject teachers actively participated in the three-day workshop that included needs analysis, adaptive lesson plan design, and peer reflection sessions through Galatama. The results revealed significant improvement: 85% of teachers understood the concept of Deep Learning, 90% were able to design HOTS-based learning activities, and 95% reported increased confidence in classroom implementation. The program also fostered a reflective and collaborative culture among teachers while strengthening the spiritual and social values that characterize madrasah education. Therefore, the integration of Deep Learning and Galatama proved effective in shaping teachers as reflective practitioners in the era of digital educational transformation.

Keywords: Deep Learning, Galatama, PAR, Teacher Competence, Reflective Learning.

1. Introduction

21st century education presents challenges that demand a paradigm shift in learning, from the transfer of information to meaningful and deep learning [1]. Teachers now play not only the role of knowledge conveyors, but also as facilitators who guide students to understand, connect, and apply concepts critically and creatively [2]. The deep learning approach is believed to be capable of developing higher-order thinking skills, collaboration, communication, and complex problem solving (Learning Policy Institute, 2019 [3]. In the context of madrasah education, the application of deep learning is relevant because it is in line with the vision of Islamic education, which is holistic, integrative, and oriented towards the development of human potential as a whole [4]. Madrasah teachers are not only required to master the substance of knowledge, but also to have the ability to design learning that can build connections between knowledge, values, and the real-life practices of students [5].

Teachers' pedagogical competencies are a key factor in realizing deep learning. Teachers need to have the ability to design teaching modules that connect theory with practice, choose adaptive learning strategies, and develop assessments that authentically assess students' thinking processes[6]. For this reason, deep learning-based teacher training and professional development is a strategic necessity for madrasahs, including MAN Insan Cendekia Halmahera Barat [6-7]. As part of efforts to strengthen teacher capacity, MAN Insan Cendekia Halmahera Barat held a Workshop on Deep Learning Learning Tool Development and Teacher Competency Development through Galatama Activities on July 30 - August 1, 2025. This activity was attended by 20 subject teachers and was held intensively for three days.

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The program is designed to equip teachers with conceptual knowledge and practical skills in developing deep learning-based teaching modules and integrating Galatama (Madrasah Literacy Movement) activities as a reflective space for improving teacher professionalism (Ministry of Religious Affairs of North Maluku, 2025. This workshop activity focused specifically on the theme of "Philosophy, Principles, and Design of Adaptive Learning Based on Deep Learning." In this session, all participants received technical assistance that emphasized the importance of teachers' ability to design teaching modules that are in line with the principles of deep learning. The training process began with an analysis of learning needs, the formulation of learning outcomes based on Higher Order Thinking Skills (HOTS), the selection of adaptive learning strategies, and the development of authentic assessments that evaluate the learning process and outcomes holistically. This approach encourages teachers to implement deep learning theory contextually in the classroom, making learning more reflective and meaningful for students [8].

One of the main challenges for madrasah teachers is the difficulty in translating deep learning theory into real practice. Many teachers are still stuck in surface learning, which is learning that focuses on memorization without encouraging deep understanding [9] Through this activity, teachers are given the space to experiment and receive direct guidance in designing learning activities that encourage active engagement and deep reflection. This workshop also strengthens the concept of professional collaboration among teachers through Galatama activities, which are forums for teachers to share and reflect on each other's learning practices. This approach is in line with the findings of the Learning Policy Institute [10], which confirms that reflection-based professional learning communities can improve teachers' pedagogical capacity, confidence, and spirit of innovation in schools and madrasah.

The integration of the deep learning and Galatama approaches also supports the national Merdeka Belajar (Freedom of Learning) policy, which emphasizes teacher autonomy and creativity in designing learning [11]. Teachers no longer simply follow curriculum guidelines but become active designers who tailor learning strategies to the needs of their students. As a result, the learning process becomes more relevant, contextual, and empowering [12]. The training approach used in this activity is based on andragogy, in which teachers are treated as adult learners who have unique experiences and learning needs. This model has proven effective for professional training because it emphasizes hands-on practice, self-reflection, and peer feedback as key components of learning [13].

The training process continued with simulations of teaching module development, group presentations, and open feedback sessions. Through these activities, teachers had the opportunity to test their ideas, receive input, and make improvements to their learning designs. This stage created a collaborative learning environment that strengthened mutual trust and a culture of knowledge sharing among teachers. Conceptually, this activity is in line with the Teacher Professional Development (TPD) framework, which focuses on improving teaching practices and student learning outcomes [14]. This type of training is not merely a transfer of knowledge, but rather a process of transforming teachers' professional competencies through reflective and contextual learning.

Based on this description, this service article aims to empirically describe the workshop implementation process, participant engagement, and the results of reflections on the improvement of teachers' pedagogical competencies in designing and implementing deep learning-based teaching modules through Galatama activities. This

study is expected to serve as a reference for a sustainable training model for other madrasahs in building a collaborative, innovative, and meaningful learning-oriented ecosystem.

2. Implementation Method

This community service activity uses the PAR [15] approach, which is a participatory research approach that emphasizes active collaboration between implementers and target communities to solve problems in a reflective and sustainable manner. The PAR model was chosen because it is suitable for activities that place teachers as the main subjects in the process of strengthening professional competencies through practice, reflection, and real action in the field. This approach is based on the principle that professional behavioral change can only be achieved if participants are actively involved in the learning process and have the space to evaluate their own experiences.

The stages of PAR implementation in this activity included four main cycles, namely (1) planning, (2) acting, (3) observing, and (4) reflecting [16]. The planning stage began with a needs assessment and focus group discussion with the madrasah principal and teachers. The purpose of this stage is to identify the main problems faced by teachers in developing deep learning-based teaching modules and implementing reflective activities such as Galatama. The mapping results show that most teachers have conceptual skills in learning design but still experience difficulties in integrating deep learning principles and authentic assessment into teaching modules.

Figure 1. Implementation Activities and Group Photo

The action phase was carried out through an intensive three-day workshop (July 30–August 1, 2025) at MAN Insan Cendekia Halmahera Barat. During this stage, teachers participated in a series of sessions covering an introduction to the concept of deep learning, adaptive learning design, simulation of teaching module development, and reflection on learning practices in the context of Galatama. This activity adopted the principle of learning by doing so that teachers not only received theoretical material but also directly practiced their learning designs and discussed them with their peers. The observation phase was carried out by the implementation team by recording the participants' participation, interaction, and work results during the workshop. The data collection instruments included participant activity observation sheets, daily reflective notes, teaching module results, and documentation recordings during the activities. This observation aimed to identify the extent to which teachers showed changes in their understanding and application of deep learning principles in learning design.

The reflection stage is at the core of the PAR approach. At this stage, teachers engage in joint reflection through daily Galatama forums, where each participant presents their learning design, receives peer feedback, and discusses improvement strategies. This reflection process encourages teachers to recognize the strengths and weaknesses of their designs and to develop critical awareness of their respective

classroom learning practices. In addition, the results of the reflection are used to develop a follow-up plan in the form of implementing deep learning-based teaching modules in the following semester.

3. Result and Discussion

This community service activity was based on an analysis of the needs of teachers at MAN Insan Cendekia Halmahera Barat, which was conducted through surveys and group discussions in early July 2025. The results of the analysis showed that most teachers understood the concept of innovative learning, but were not yet familiar with the application of deep learning in the preparation of teaching modules. Of the 20 teachers involved, 85% stated that they had never attended training that specifically discussed the integration of deep learning with reflective activities such as Galatama. The planning stage began with mapping the specific needs of teachers through focus group discussions (FGD) and pedagogical skills analysis. The mapping results showed that 14 of the 20 teachers were still oriented towards teacher-centered learning and were not yet able to translate learning outcomes into indicators in line with the principles of Higher Order Thinking Skills (HOTS). This data was then used as the basis for designing training activities that emphasized reflective and collaborative practices.

Based on these findings, a three-day training activity was designed that combined theoretical presentations, teaching module development practices, and peer reflection through the Galatama forum. The structure of the activity allowed teachers to learn directly through practical experience (learning by doing), in line with the main principle of the Participatory Action Research (PAR) approach. During the action phase, activities were carried out from July 30 to August 1, 2025, at the MAN Insan Cendekia Halmahera Barat building, involving 20 subject teachers. The implementation included seven main sessions: introduction to the Galatama concept, deep learning philosophy, adaptive learning design, teaching module simulation, authentic assessment development, group reflection, and outcome evaluation.

Figure 1. Implementation of Activities

During the activities, the community service team conducted participatory observations of the teachers' activity, collaboration, and work results. The training outcome data is summarized in Table 1.

Table 1. Data on Activities and Results of the Deep Learning and Galatama Workshop

No	Observed Aspects	Assessment Indicators	N	%	Description
1	Understanding of Deep Learning concepts	Teachers understand the principles and elements of deep learning.	17	85	Significant improvement after the second and third sessions
2	Ability to develop HOTS-based Learning Outcomes	Teachers are able to formulate learning outcomes that require higher-order thinking.	16	80	Improvement occurred after the mentoring sessions

No	Observed Aspects	Assessment Indicators	N	%	Description
3	Ability to design adaptive learning activities	Teachers are able to design active and collaborative learning activities.	18	90	Demonstrated through the teaching modules produced
4	Involvement in Galatama discussions and reflections	Teachers participate in peer reflection and share good practices.	16	80	Increased enthusiasm on the third day
5	Mastery of authentic assessment	Teachers are able to develop performance-based and project-based assessment instruments.	15	75	Further training is still needed
6	Improved collaboration and communication with peers	Teachers are able to work in groups and provide mutual feedback.	18	90	Evident in group simulations and presentations
7	Confidence in implementing Deep Learning	Teachers demonstrate readiness to implement training modules in madrasahs	19	95	Significant improvement after training
8	Satisfaction with training activities	Teachers assess activities as relevant, applicable, and contextual	20	100	All participants gave positive feedback

The data in Table 1 shows a substantial improvement in almost all aspects of teacher competence. The highest improvement occurred in self-confidence (95%) and peer collaboration (90%), while authentic assessment (75%) remains an area for development. This shows that participatory-based training is effective in improving teachers' conceptual understanding and practical skills. During the observation stage, qualitative data was collected through observation sheets, reflective journals, and documentation of participants' work. Observations showed that 18 out of 20 teachers demonstrated significant changes in learning behavior, marked by increased participation in discussions, courage to ask questions, and willingness to accept feedback. Teachers began to shift from a teacher-centered to a learner-centered pattern, where the learning process was driven by exploration and reflection.

Teachers' involvement in the Galatama activity simulation also increased day by day. While participation was still passive on the first day, by the third day 90% of teachers were actively providing feedback on their peers' learning designs. This reflective activity formed a peer learning culture that was central to the success of the PAR approach. Visually, the dynamics of teachers' reflective change during the four stages of PAR can be seen in Table 2.

Table 2. Teacher Reflections Based on the Four Stages of PAR

PAR stages	Focus of Activities	Main Activities	Teacher Findings and Reflections	Impact on Competence
Planning	Identifying needs and mapping teachers' abilities	Focus Group Discussion (FGD) - Analysis of deep learning and Galatama training needs	Teachers realized that learning has been oriented towards memorization and has not developed HOTS. Seventeen out of twenty teachers stated the need for a paradigm shift.	Increased reflective awareness of the importance of critical and collaborative learning design.
Acting	Conducting workshops and	Introduction to deep learning principles and	Teachers actively discussed and practiced	A noticeable improvement in

PAR stages	Focus of Activities	Main Activities	Teacher Findings and Reflections	Impact on Competence
	practicing teaching module development	Galatama philosophy - Simulation of HOTS teaching module development - Cross-disciplinary discussions	developing contextual teaching modules. Eighteen out of twenty teachers were able to develop learning outcomes that required higher-order thinking.	pedagogical competence and reflection-based teaching tool design. The formation of a culture of peer learning and collaboration..
Observing	Monitoring teachers' performance and work results	Direct observation and documentation of group work results	Teachers showed improvement in collaboration, reflection, and creativity. 90% of teachers were active in the Galatama simulation.	Growth in professional awareness and ongoing commitment to learning innovation. Impact on Competence
Reflecting	Evaluating results and follow-up	Teaching module presentations - Reflection forum and implementation plans	Teachers formed small study groups to follow up on Galatama. 95% felt ready to implement deep learning.	Growth in professional awareness and ongoing commitment to learning innovation.

Table 2 shows that the four stages of PAR are interrelated and produce a complete cycle of reflective learning. The planning stage raises critical awareness, the action stage develops practical skills, the observation stage strengthens peer reflection, and the reflection stage encourages long-term commitment. These results reinforce Donald Schön's [17], theory of the reflective practitioner, in which teachers who are able to reflect on their practice will continue to develop as learning professionals. The application of PAR in the context of madrasah teacher training has proven effective in forming a sustainable reflective learning cycle.

In addition to improving pedagogical competence, this activity also strengthens teachers' social and collaborative competence. Teachers learn to work in interdisciplinary teams and provide each other with feedback. This builds mutual trust and strengthens collective efficacy among teachers, which is an important social capital for learning transformation in madrasahs. Empirical findings also show that the integration of deep learning and Galatama fosters synergy between academic content mastery and Islamic character building. In practice, teachers do not only focus on cognitive achievements, but also on the values of honesty, responsibility, and spiritual reflection of students.

Quantitatively, the average increase in understanding of deep learning concepts reached 85%, while the increase in adaptive learning design skills reached 90%. This increase is consistent with the findings of the Learning Policy Institute [18], which states that practice-based training and collective reflection have a long-term impact on the quality of teacher learning.

Another interesting aspect is the formation of a teacher learning community at MAN Insan Cendekia Halmahera Barat. Teachers agreed to hold Galatama as a weekly routine activity to maintain a culture of reflection and continuous competency development. The evaluation of the activity showed that 95% of participants considered the workshop to be highly relevant to their needs, and 100% expressed satisfaction with

the material, facilitators, and collaborative training atmosphere. This data demonstrates the success of the PAR approach in fostering a sense of ownership of the learning process.

The challenge faced during the activity was the limited time for in-depth authentic assessment. Some teachers still need further assistance to develop project-based and portfolio-based evaluation instruments. Therefore, a follow-up program in the form of a coaching clinic needs to be designed for the next stage. Conceptually, this activity demonstrates the synergy between teacher professional development and madrasah community empowerment. Teachers are not merely recipients of training, but become agents of change who critically reflect on their own practices. This is the main essence of Participatory Action Research (PAR) as a method of service that fosters collective awareness and sustainability of innovation.

From a theoretical perspective, these results reinforce Darling-Hammond et al. [19] view that effective training must be oriented towards real-world practice, peer collaboration, and systematic reflection. The implementation of PAR in teacher training has been proven to change the mindset from merely being "recipients of knowledge" to "creators of knowledge" (teachers as researchers). Based on quantitative and reflective results, it can be stated that the application of the PAR approach in the Deep Learning and Galatama Workshop activities has succeeded in strengthening the pedagogical, social, and professional competencies of teachers at MAN Insan Cendekia Halmahera Barat. This success shows that participatory and reflective training models can be replicated in other madrasas as a strategy to increase teacher capacity in facing the challenges of 21st-century learning.

4. Conclusion

From the above discussion, it can be concluded that community service activities with the theme "Strengthening Teacher Competence Through the Integration of the Deep Learning Model and Galatama Activities at MAN Insan Cendekia Halmahera Barat" have proven to be effective in improving the pedagogical, collaborative, and reflective competencies of madrasah teachers. Through the application of the Participatory Action Research (PAR) approach with four stages—planning, acting, observing, and reflecting—teachers experienced a transformation in their understanding and application of the deep learning concept in learning. The results of the activity showed that 85% of teachers understood the basic principles of deep learning, 90% were able to design HOTS-based learning, and 95% showed an increase in confidence in implementing the model in the classroom.

The success of this activity was influenced by three main factors, namely the application of participatory training methods that placed teachers as the main actors in learning, peer collaboration through the Galatama forum that fostered a culture of reflection, and institutional support from madrasahs that encouraged the sustainability of innovation. In addition to strengthening professional capabilities, this activity also fosters spiritual and social values that are the identity of madrasahs. Thus, the PAR approach in this activity not only functions as a research method but also as a paradigm for teacher professional empowerment that can produce reflective practitioners oriented towards innovation and learning transformation in the era of digital education.

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6. Declaration

Author contributions and responsibilities - The authors made substantial contributions to the conception and design of the study. The authors were responsible for the data analysis, interpretation, and discussion of the results. The authors read and approved the final manuscript.

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