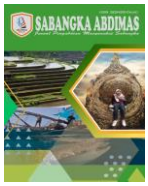

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TRANSFORMING ELEMENTARY SCHOOL TEACHERS' COMPETENCE THROUGH DEEP LEARNING TRAINING IN THE MERDEKA CURRICULUM

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Abstract: *This community service program supported the implementation of a deep learning approach in the Merdeka Curriculum to develop eight graduate profiles characterized by critical, creative, and adaptive thinking. Many elementary school teachers in Kecamatan V Koto Kampung Dalam, Pariaman City, still lacked a solid understanding of deep learning concepts and implementation strategies, including limited digital literacy, which affected learning quality. The program aimed to strengthen teachers' competencies in designing and applying deep learning-based instruction aligned with the eight graduate profiles. Participatory Action Research (PAR) was used through stages of problem identification, planning, training, observation, and reflection. Participants were sixth-grade teachers from 31 public elementary schools in the target area. Results showed a significant improvement in teachers' understanding, indicated by higher post-test scores compared to pre-test scores. In the post-test, 65% of participants achieved perfect scores and the rest obtained very good results. Follow-up mentoring further enhanced teachers' skills in developing deep learning-based teaching modules. Overall, the training effectively improved teacher professionalism and contributed to better learning quality in elementary schools.*

Abstrak: Kegiatan pengabdian kepada masyarakat ini mendukung penerapan pendekatan deep learning dalam Kurikulum Merdeka untuk membentuk delapan profil lulusan yang berpikir kritis, kreatif, dan adaptif. Di Kecamatan V Koto Kampung Dalam, Kota Pariaman, banyak guru SD belum memahami konsep dan strategi implementasi deep learning serta memiliki literasi digital yang terbatas, sehingga berdampak pada rendahnya kualitas pembelajaran. Program ini bertujuan meningkatkan kompetensi guru dalam merancang dan melaksanakan pembelajaran berbasis deep learning agar selaras dengan delapan profil lulusan. Metode yang digunakan adalah Participatory Action Research (PAR) melalui tahapan identifikasi masalah, perencanaan, pelaksanaan pelatihan, observasi, dan refleksi. Peserta terdiri atas guru kelas VI dari 31 SD Negeri di wilayah sasaran. Hasil menunjukkan peningkatan pemahaman yang signifikan berdasarkan perbandingan pre-test dan post-test. Sebanyak 65% peserta memperoleh nilai sempurna pada post-test, sedangkan sisanya meraih kategori sangat baik. Pendampingan lanjutan memperkuat keterampilan guru dalam menyusun modul ajar berbasis deep learning. Pelatihan ini efektif meningkatkan kapasitas profesional guru dan berkontribusi pada peningkatan mutu pembelajaran di SD.

INTRODUCTION

The deep learning approach in basic education is an urgent need in building student competencies that are in line with the eight graduate profiles as proclaimed in the Independent Curriculum. This approach emphasizes deep understanding, critical reflection, and the application of concepts in real-world situations to develop students' critical reasoning skills, creativity, and effective communication in students (Fullan et al., 2018). In addition, holistic learning through the integration of thinking, heart, taste, and sports encourages students not only to memorize, but also to understand and apply knowledge in daily life (Puskurjar, 2025). This is in line with the principles of meaningful, mindful, and joyful learning, making the learning process more contextual and relevant to students' lives.

The implementation of deep learning also has a great contribution to strengthening independence, collaboration, and civic awareness, which are essential skills in facing future dynamics. In this approach, teachers serve as facilitators who encourage experiential learning, enriching understanding through projects and cross-disciplinary exploration. Some studies show that deep learning can improve students' metacognitive awareness, supporting them in learning reflexively and independently (Hattie & Donoghue, 2016). With the support of digital technology, this approach is increasingly relevant in building an adaptive and innovative learning ecosystem, which not only supports academic mastery, but also the formation of character as a whole.

However, implementing the deep learning approach designed by the Ministry of Primary and Secondary Education faces significant challenges, particularly regarding teacher readiness (Suyanto Many educators do not have a complete understanding of the concept and strategy of implementing this approach, so they have difficulty in implementing it in the classroom. Studies show that most teachers are confused by new approaches such as project-based learning and differentiation of learning introduced in the Independent Curriculum (Noviandari, 2024; Yulianto et al., 2024). In addition, teachers' limited digital literacy is an obstacle to technology integration, an essential aspect of deep learning (Soepriyanti et al., 2025; Weninger, 2022).

This condition is also reflected in the local context, as seen in V Koto Kampung Dalam District, Pariaman City, which has 31 elementary schools (30 public and 1 private). Data shows that only two schools have A accreditation, namely SD Negeri 03 and SD Negeri 05 V Koto Kampung Dalam, while the other schools are accredited B. This fact indicates that there is still room for improvement, especially in the quality of

the learning process, which is ineffective and inefficient according to student evaluations (Setyaningsih, 2017). Therefore, teachers in this region need better learning planning, with a meaningful, mindful, and joyful approach, as emphasized in the deep learning framework.

Teachers' lack in understanding and implementation of deep learning approaches can negatively affect the quality of learning in elementary schools (Andriana, 2021). Without a proper understanding, teachers tend to revert to conventional learning methods oriented towards memorization and one-way instruction, thereby hindering the development of critical, reflective, and applicative thinking (Albina et al., 2022). As a result, students miss out on opportunities to gain meaningful, context-rich learning experiences and experience stagnation in the development of graduate profiles, particularly in critical reasoning and creativity (Onzi et al., 2023). In addition, teachers' limited understanding of collaborative strategies in deep learning is an obstacle in fostering students' collaboration and communication skills (Garzón, 2014; Lourenço et al., 2025).

A further implication of teachers' limited understanding of the deep learning approach is the failure to develop eight graduate profiles optimally (Suyanto Without a deep learning experience, students are not motivated to become creative independent learners in facing challenges (Ansya & Salsabilla, 2024; Yu, 2024). Low contextualization of learning can also lead to weak social awareness and concern for the environment, which are part of the citizenship and health dimensions in graduate profiles (Zaeni et al., 2023). Therefore, comprehensive teacher training is essential in improve pedagogical competence and digital literacy, enabling teachers to implement deep learning effectively (Sánchez et al., 2024).

Efforts to improve the quality of learning and the profile of graduates can only be realized if it is carried out with the right approach and in accordance with the direction of national education policy. The Independent Curriculum has offered this framework through a deep learning approach that prioritizes meaningful, mindful, and joyful learning (Cahyo, 2024). But in reality, teachers' understanding of this approach is still limited. Many teachers have not fully understood the concept of deep learning and the eight graduate profiles which are important aspects of this curriculum (Suryati, 2025). Teachers' interest in participating in training and seminars on this topic indicates a real need in the field.

Based on the identification of these problems, five priority issues need to be addressed immediately, namely: (1) lack of teachers' understanding of the implementation of the Independent Curriculum, (2) lack of teachers' understanding in planning and (3) implementation of deep learning approaches, (4) low understanding of the eight graduate profiles, and (5) limited teachers' digital literacy. Therefore, the recommended solution is the implementation of structured training on the deep learning approach as a strategy in realizing eight graduate profiles. This training will be a strategic alternative that not only develops teachers' conceptual understanding, but also enhances their practical abilities in implementing adaptive and transformative learning.

METHOD

This community service activity was carried out in Pariaman Regency, with the main target being State Elementary School teachers in the V Koto Kampung Dalam District area, especially members of class VI kombel at SD N Sekecamatan X Koto Kampung Dalam, which consisted of 3 31 elementary schools. The main purpose of this activity is to equip teachers with skills in designing and implementing learning experiences that adopt a deep learning approach to realize the 8 graduation profiles. The approach used in this training is Participatory Action Research (PAR). This method emphasizes the participatory empowerment of community members, enabling them to take an active role and to be aware of the dynamics and challenges they face in social and educational contexts (Brown, 2024).

This training began with the problem identification stage, during which it was found that most teachers lacked an adequate understanding of how in design learning based on the deep learning approach. The next stage is action planning, carried out in coordination with the chairman of the MKKS of sub-district X Koto Kampung Dalam in order to prepare strategic steps for implementation. The third stage includes the implementation of training, which is followed by hands-on practice by teachers in developing learning designs based on deep learning approaches. The fourth stage focuses on observing the results of the training carried out, while the fifth stage involves joint reflection as an evaluative effort on the process and results of ongoing activities.

In its implementation, teachers are not only equipped with a conceptual understanding of learning grounded in deep learning approaches, but are also directed to develop creative, context-specific learning planning practices to realize 8 graduate profiles. The delivery of material was carried out through the lecture method, which

provided theoretical exposure to deep learning and 8 profiles of the latest graduates. In addition, there are practical sessions that allow participants to get direct assistance from the implementation team and resource persons in designing digital teaching materials that are applicable and relevant to learning needs in elementary schools. This combinatorial approach between material delivery and practice is expected to equip trainees with comprehensive insights and technical skills that can be implemented in learning activities.

Broadly speaking, this service activity is carried out through four main stages. First, the pre-test stage, which includes preparing training materials and learning media, as well as implementing pre-tests to measure participants' initial understanding. An implementation permit was also submitted to MKKS District X Koto Kampung Dalam as the location for the implementation. The second stage is the delivery of material, during which participants systematically receive it and directly practice in compiling teaching modules based on the deep learning approach. Third, at the post-test stage, evaluation is carried out through open discussions and measures to improve participants' understanding through evaluative instruments. Fourth, at the stage of guided assignment, participants are given follow-up tasks that are done with online assistance.

All of these stages are systematically designed to ensure the effectiveness of training, as well as ensure the improvement of teachers' professional competence in designing and implementing learning based on high-level thinking skills and optimal use of digital technology.

RESULTS AND DISCUSSION

Result

Analyzing the situation described in the background and the results of identifying the problems and needs of target partners, the Community Service Team from the PGSD Department of Padang State University (UNP) held a training activity focused on deep learning-based learning and 8 graduate profiles. This program is designed as a solution to the problems faced by teachers in integrating the latest learning with a deep learning approach, and it offers 8 graduate profiles that develop critical, creative, and analytical thinking skills in students.

This training was attended by grade VI teachers from the Koto Kampung Dalam District District consisting of 31 elementary schools. The results of implementing the activity show that there are developments in improving teacher competence, especially

in understanding and implementing learning based on the deep learning approach and the 8 graduate profiles. The entire series of activities is carried out systematically through four main stages, namely the implementation of pre-tests as an initial benchmark of participants' understanding, the delivery of training materials, the implementation of post-tests to measure the impact of training, and guided assignments as a means of strengthening practices that are accompanied in a structured manner.

Tahap Pre-test

The pre-test was carried out to obtain an initial overview of the teacher's understanding of a number of important aspects, namely the concept of learning based on the deep learning approach and 8 graduate profiles. Based on the results of the initial test, it is known that the teacher's understanding of deep learning and of the 8 graduate profiles. This is reflected in the pretest results, which show that as many as 76.7% of teachers do not understand the concept of *the deep learning approach*. The test results can be seen in the following image.

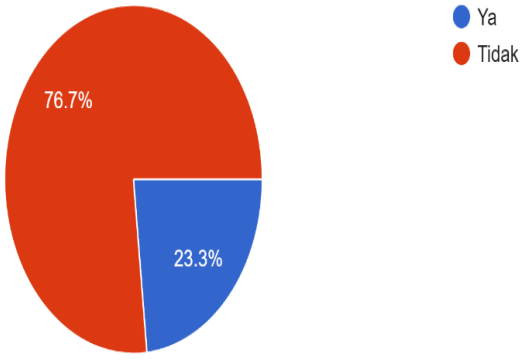

Figure 1. Teacher's level of understanding in *deep learning*

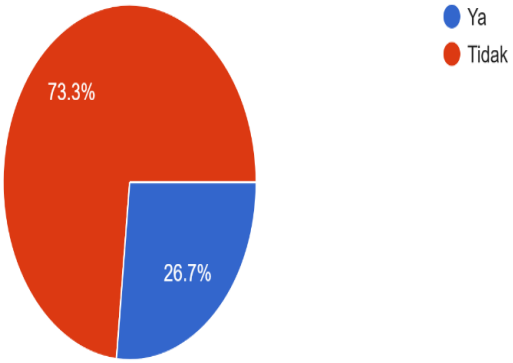

Figure 2. Teacher's level of understanding on 8 graduate profiles

These findings show that teachers face fundamental obstacles in designing and developing learning experiences aligned with the *deep learning approach* to realize 8 profiles of elementary school graduates.

Stage of Presentation of Material

At the stage of presenting the training material, participants received a deeper understanding of 8 main topics, which had been adjusted to the priority needs identified in the previous results. The materials presented include the Independent Curriculum, deep learning, conscious learning, meaningful learning, fun learning, 8 graduate profile materials, learning modules based on the deep learning approach, and guidance on

implementing the deep learning approach. The success indicators of this training are explained in table 1 below.

Table 1. The Material and Method of Training

No	Material	Method	Achievement Indicators
1	Independent curriculum	Lectures and discussions	Teachers understand the independent curriculum
2	Deep *learning*	Lectures and discussions	Teachers understand *deep learning*
3	Mindful learning	Lectures and discussions	Teachers understand and can design conscious learning
4	Meaningful learning	Lectures and discussions	Teachers understand and can design meaningful learning
5	Fun learning	Lectures and discussions	Teachers understand and can design fun learning
6	Material 8 graduate profiles	Lectures and discussions	Teachers understand the achievement indicators of 8 graduate profiles
7	Designing deep *learning-based learning modules*	Lectures and discussions	Teachers produce deep learning-based learning modules
8	Practice *deep learning approach*	Lectures, discussions, and practices	Teachers can practice deep learning-based learning

The delivery was through an interactive lecture followed by a participatory discussion, in order to strengthen conceptual understanding while improving teachers' practical skills in designing learning in line with *deep learning principles*. Figure 3 depicts the atmosphere when the resource person delivered the material to the training participants.

Figure 3. Material Provision

Post-test stage

The post-test is given to measure the level of achievement of improving teachers' insights, understanding, and skills related to the deep learning approach in the Independent Curriculum and 8 graduate profiles. Post-test results can be seen on Figure 4.

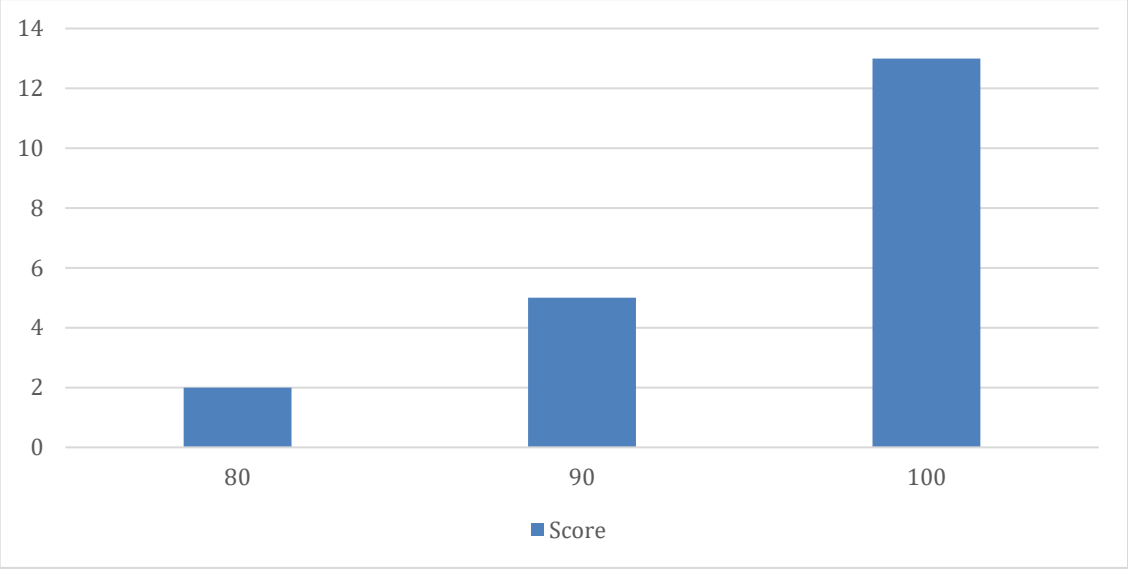

Figure. 4 Distribution of Deep Learning Training Post-test scores

The post-test score distribution graph showed that most of the trainees, namely 13 people or 65%, managed to achieve a perfect score of 100, followed by 5 people (25%) with a score of 90, and only 2 people (10%) obtained a score of 80. This pattern illustrates a very high level of material mastery among the participants, with most answering all the questions correctly. These results also reflect the effectiveness of the training in improving understanding of deep learning concepts according to the Independent Curriculum, although there is a slight variation in the values, indicating that there is still room for improvement in certain aspects.

Guided Assignments

The Guided Assignment stage lasted 1 month after the training, during which teachers were asked to implement the learning products and evaluation instruments designed during the training session. The mentoring process is carried out online through a virtual platform, and teachers are required to submit periodic reports related to the development of deep learning-based teaching modules to realize 8 graduate profiles. The results of this assignment became an integral part of the program evaluation, which

showed that sustainability in the form of mentoring after training has a real contribution to the effectiveness of implementation at the education unit level.

Discussion

The assistance provided by the Community Service Team of the PGSD Department at Padang State University has had a positive impact on teachers' professional competence. Based on the pre-test conducted before the training, it is evident that teachers' understanding of HOTS learning and the preparation of digital literacy and numeracy questions remain relatively low, with an average scores of 60.43 and 58.26, respectively. This reflects the serious challenge in the preparation of learning designs that encourage high-level thinking skills.

The training is structured systematically and comprehensively, covering four main topics: HOTS-based learning planning, literacy question preparation, numeracy question preparation, and integration of digital technology in the learning process. The material is delivered through a combination of lecture methods and participatory discussions that emphasize improving teachers' applicative skills in compiling contextual and meaningful learning. Based on the post-test results, there was a significant increase: the HOTS-related comprehension score increased to 80, while literacy and numeracy comprehension reached an average of 88. This data shows the success of the training in strengthening teachers' conceptual understanding as well as practical skills.

Based on these achievements, it is suggested that the implementation of similar training in the future be complemented by strengthening the content in the form of the use of case studies and learning simulations, extending the post-training mentoring period, developing more diverse evaluation instruments, and increasing synergy with schools to ensure the sustainability of the program. With a structured, sustainable approach, training is expected to contribute more to improving the quality of learning and student learning outcomes at the elementary school level.

CONCLUSION

Post-training mentoring shows that teachers can apply the knowledge and skills gained in classroom practices. There is a shift in mindset from a conventional, memorization-oriented approach to a more contextual, creative, and student-centered approach. Although some teachers still face obstacles in utilizing digital technology, the collaborative spirit and openness to innovation are growing. The joint reflection also

emphasized the importance of deep learning as a strategy relevant to the demands of the Independent Curriculum and the achievement of the eight graduate profiles. Based on these findings, it is recommended that the training program be expanded to other schools, complemented by continuous mentoring through the learning community, and strengthened with more intensive digital literacy training. In addition, it is necessary to develop more authentic and diverse evaluation instruments to assess the success of deep learning-based learning. Synergy with stakeholders, including schools, education offices, and universities, is also key in ensuring the sustainability of the program while disseminating good practices to the wider educational environment.

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