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Analysis of the Evaluation Results of Deep Learning Training for Elementary School Teachers in Pekanbaru City Using the Kirkpatrick Level 1 and Level 2 Model

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ABSTRACT

This study evaluates the effectiveness of the Deep Learning training program for elementary school teachers in Pekanbaru City using the Kirkpatrick Evaluation Model, specifically Level 1 (Reaction) and Level 2 (Learning). Using a descriptive-evaluative qualitative approach, data were collected through in-depth interviews, classroom observations, and document analysis with 16 teachers from 8 elementary schools. School principals, facilitators, and staff members from the Balai Guru dan Tenaga Kependidikan Provinsi Riau served as supporting informants to strengthen data triangulation. At Level 1, all dimensions of participants' reactions were categorized as good to very good, with the highest levels of satisfaction associated with facilitator competence and participant motivation. At Level 2, participants demonstrated a significant improvement in their understanding of the philosophies of mindful, meaningful, and joyful learning, as well as the four holistic dimensions. Nevertheless, the competencies of Critical Thinking and Creativity within the 6C framework remained susceptible to oversimplified interpretation. Overall, classroom observations revealed a measurable shift from a transmissive to a more facilitative approach to teaching and learning.

Keywords*: *deep learning, kirkpatrick evaluation, teacher training, 6c competencies, elementary school

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INTRODUCTION

The development of the twenty-first century has brought fundamental changes to the demands for the quality of human resources in the education sector. Advances in information technology, shifts in socio-economic structures, and the dynamics of global competition have compelled educational systems to adopt learning approaches that emphasize not only content mastery but also students' critical thinking, creativity, collaboration, and communication skills. In this context, educational quality can no longer be measured solely by academic achievement; rather, it must also be assessed by the extent to which the learning process cultivates individuals with adaptive, reflective, and strong character.

Teachers occupy a strategic position as agents of change within the educational ecosystem. As mandated by Law Number 14 of 2005 concerning Teachers and Lecturers, the continuous professional development of teachers has become imperative, and the effectiveness of training programs constitutes a critical variable in determining the extent to which investments in resources genuinely influence changes in classroom instructional practices (Hendri, Azhar, & Isjoni, 2022).

One of the strategic initiatives currently being intensively implemented is Deep Learning training. Through the Decree of the Director General of Teachers and Education Personnel Number 23/B/HK.03.01/2025, the Ministry of Primary and Secondary Education defines Deep Learning as an educational approach that places human values at the core of education by creating learning experiences that are mindful, meaningful, and joyful, while integrating four holistic dimensions: intellectual development (olah pikir), ethical and spiritual development (olah hati), aesthetic and emotional development (olah rasa), and physical development (olah raga) (Fitri, Amin, et al., 2025). Within the framework proposed by Fullan

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et al. (2018) through New Pedagogies for Deep Learning (NPDL), this approach is operationalized through six global competencies known as the 6Cs: Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking. The implementation of the 6C framework is not limited to direct classroom instruction. However, it may also be integrated into instructional media development, as demonstrated by Faizal, Khoirunnisa, et al. (2026), who developed a science and social studies electronic module (IPAS e-module) based on Deep Learning, achieving very high validity.

Despite the comprehensive policy foundation established, its implementation continues to face significant challenges. Fauziati (2025) found that teachers' understanding of the Deep Learning concept remains fragmented, while Handayani et al. (2025) found that teachers tend to reduce the meaning of "deep learning" to merely physical, project-based activities, without comprehending its essence as the integrated development of 6C competencies. This condition is further exacerbated by the tendency of literacy strategies to remain confined to formal routines without reflective follow-up, thereby necessitating a shift toward more systematic instruction grounded in Deep Learning principles (Sri Dewi Nirmala, Puspita, & Ramdhani, 2026). Inconsistent empirical findings further reinforce the urgency of this study: Zainil et al. (2025) reported a 67.6% increase in STEAM integration following training, whereas Susanty (2022) identified a 23.7% disparity between cognitive and psychomotor achievement outcomes in online training programs. These inconsistencies suggest that the effectiveness of Deep Learning training is highly dependent on the implementation context, participant characteristics, and the evaluation instruments employed.

Methodological limitations also constitute a critical concern. Zainuddin et al. (2024) argued that training evaluation instruments within government institutions remain excessively generic, with conventional pre-tests and post-tests dominating 72% of the reviewed studies. Consequently, these instruments are unable to capture the complexity of participants' learning experiences, particularly dimensions related to intrinsic motivation and readiness for paradigm shifts in teaching practices. To address this complexity, the Kirkpatrick Evaluation Model provides a systematic, hierarchical framework comprising four levels: Reaction, Learning, Behavior, and Results. This model has demonstrated reliability across various contexts, including vocational teacher training (Asghar et al., 2022), novice teacher induction programs (Larasati & Asropi, 2025), and technical religious education and training programs (Nabilah et al., 2023). However, its specific application to evaluate Deep Learning training for elementary school teachers, particularly in Pekanbaru City, remains scarcely addressed in the scientific literature.

Geographical and population-based research gaps further strengthen the rationale for this study. Research evaluating Deep Learning training has been documented only in Barru Regency (Musfirah et al., 2025), South Tangerang (Handayani et al., 2025), and Jambi City (Nopriansyah, 2025), while Pekanbaru City has not yet been the focus of similar investigations. At the theoretical level, no conceptual framework has been identified that explicitly integrates 6C indicators with Kirkpatrick Level 2 success criteria within the context of elementary education. It should also be noted that approximately 32% of existing studies use the term "Deep Learning" in the context of artificial intelligence. Therefore, this study explicitly emphasizes that the term Deep Learning herein refers to a pedagogical strategy as developed by Fullan et al. (2018) and formulated within national education policy (Saputra et al., 2025). Based on these scientific considerations, this study was designed to analyze the outcomes of Deep Learning training for elementary school teachers in Pekanbaru City through Kirkpatrick Level 1 and Level 2 evaluations by integrating 6C indicators into the evaluation framework, to provide an empirical foundation for policymakers in designing more effective training programs that generate tangible impacts in classroom practice.

METHOD

This study employed a descriptive-evaluative qualitative approach grounded in the interpretivist and social constructivist paradigm. The selection of this approach was based on the nature of the research object, namely the experiences, perceptions, and subjective meanings constructed by teacher participants in the training program, phenomena that are inherently contextual and cannot be adequately reduced to numerical

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representation alone. As argued by John W. Creswell and Cheryl N. Poth (2018), qualitative approaches enable researchers to explore the meanings individuals and groups attribute to particular social issues.

This research was conducted in Pekanbaru, Riau. The selection of this location was based on several strategic considerations. First, Pekanbaru serves as the educational administrative center of Riau Province and was one of the primary target areas for the 2025 Deep Learning training program organized by Balai GTK Provinsi Riau. The training program was implemented across several elementary schools, including SD Negeri 17 Pekanbaru, SD Negeri 26 Pekanbaru, SD Negeri 47 Pekanbaru, SD Negeri 128 Pekanbaru, SD Negeri 180 Pekanbaru, SD Negeri 194 Pekanbaru, SD Negeri 196 Pekanbaru, and SD Kasih Cahaya Bunda Pekanbaru. Second, no prior evaluation study applying the Kirkpatrick framework to Deep Learning training had specifically examined the context of Pekanbaru City.

Research participants were selected through purposive sampling, prioritizing relevance, direct involvement in the training program, and willingness to participate. In evaluative qualitative research, participant selection is not intended to achieve statistical representation, but rather to obtain depth and richness of data, as emphasized by Michael Quinn Patton (2015). The inclusion criteria for the primary informants were as follows: (1) officially registered as participants in the Deep Learning training program organized by Balai GTK Provinsi Riau in 2025; (2) actively teaching in elementary schools in Pekanbaru; and (3) willing to participate voluntarily. Data saturation served as the criterion for terminating data collection. To strengthen data validity, this study also included supporting informants, including school principals, facilitators, and staff members from Balai GTK Provinsi Riau, who had direct knowledge of and involvement in both the training's implementation and its application in instructional practice. These supporting informants functioned as triangulation sources to verify and enrich findings obtained from the primary informants.

Data collection in this study employed three complementary techniques: in-depth interviews, observation, and document analysis. The simultaneous use of these three techniques aimed to establish source and method triangulation in order to enhance the credibility of the collected data. In-depth interviews were conducted using a semi-structured interview guide designed based on the evaluation dimensions of Kirkpatrick Levels 1 and 2. Interviews were conducted face-to-face. Observations of teachers' post-training classroom practices were conducted using observation sheets developed from the indicators of the 6C competencies (Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking). Document analysis was also conducted on documents related to the implementation of the Deep Learning training program. The analyzed documents included: (a) attendance lists and participant training certificates; (b) training modules and instructional materials; (c) official post-training evaluation reports; (d) lesson plans prepared by teachers after participating in the training; and (e) participants' reflective training journals, where available. These documents were analyzed to verify and enrich data obtained from interviews and observations.

Data analysis in this study employed the interactive analysis model developed by Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña (2014), which consists of four interconnected and cyclical components: data collection, data condensation, data display, and conclusion drawing and verification.

RESULTS AND DISCUSSION

Kirkpatrick Level 1 Evaluation: Participants' Reactions to the Training Program

Satisfaction with Training Materials

All 16 elementary school teachers participating in the Deep Learning training program in Pekanbaru City provided positive evaluations regarding the relevance of the training materials to actual classroom needs. Participants stated that the approach aligns with the principles of the Merdeka Curriculum, which emphasizes deep conceptual understanding rather than rote memorization. This finding is consistent with Musfirah, Bahri, and Sumarlin (2025), who reported a 67.6% increase in teachers' understanding of Deep Learning materials, and with Handayani et al. (2025), who identified material relevance as the strongest predictor of participant satisfaction at Kirkpatrick Level 1.

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Nevertheless, several participants identified weaknesses in the depth of the materials, particularly in the design of 6C-based teaching modules and in the provision of concrete examples appropriate for the elementary school level. This finding aligns with Susanty (2022), who noted that online training programs often leave a gap between conceptual understanding and practical implementation skills.

Satisfaction with Training Facilitators

The evaluation of the facilitators yielded consistently positive results. Participants perceived the facilitators as capable of clearly and contextually explaining the 6C competencies, fostering a reflective and collaborative discussion atmosphere, and responding effectively to participants' questions. The facilitators implemented andragogical principles through the training structure of In-Service 1 (46 instructional hours), followed by On-the-Job Training 1, 2, and 3 (8 instructional hours), and concluded with In-Service 2 (32 instructional hours). This staged approach enabled participants to progressively understand, practice, and reflect upon the learning materials.

As recommended by Kirkpatrick and Kirkpatrick (2006), high-quality training design constitutes a prerequisite for success at higher evaluation levels, while facilitators' ability to manage participants' diverse backgrounds becomes essential for creating a conducive learning environment (Knowles et al., 2015).

Satisfaction with Training Methods, Media, and Program Implementation

Participants perceived group discussions and simulation methods as the most effective instructional strategies. The variety of methods employed, including lectures, group discussions, role-play, case studies, and simulations, was considered capable of accommodating diverse learning styles. Digital learning materials delivered through the Learning Management System (LMS) received positive evaluations for quality and accessibility. However, unstable internet connectivity in several locations remained a significant obstacle, reinforcing Zainuddin et al.'s (2024) argument that digital infrastructure functions as a crucial moderating variable in technology-based training programs.

From the organizational perspective, time management was considered well-structured. Nevertheless, physical facilities, particularly room temperature and noise levels in several venues, still required improvement, as these factors affected participants' concentration. Overall, committee support was positively evaluated by the majority of participants.

Participant Motivation and Openness to Change

This dimension generated some of the richest findings in the study. Participants' motivation emerged from a combination of intrinsic factors (the desire to improve instructional quality) and extrinsic factors (institutional assignment). Interestingly, participants who initially attended the training due to institutional obligations consistently reported gradual development of intrinsic motivation throughout the training. This finding aligns with Deci and Ryan's (2000) theory, which posits that meaningful learning experiences can transform extrinsic motivation into more internalized forms of motivation.

Participants also demonstrated significant openness toward changes in teaching paradigms. They increasingly viewed themselves as facilitators of students' thinking processes rather than merely transmitters of information. However, some participants still experienced internal barriers, particularly doubts regarding classroom management in large classes and proportional time allocation. These concerns reflect a form of conditional self-efficacy, as conceptualized by Bandura (1997).

Kirkpatrick Level 2 Evaluation: Participant Learning Outcomes

Mastery of Fundamental Deep Learning Concepts

Nearly all participants were able to articulate the philosophies of mindful, meaningful, and joyful learning using their own words and to provide concrete examples of their implementation. Mindful learning was understood as students' full awareness of the learning process; meaningful learning as connecting learning

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materials to real-life experiences; and joyful learning as fostering a pedagogically positive learning atmosphere rather than merely a lively classroom environment.

Participants were also able to integrate the four holistic dimensions of intellectual development (olah pikir), ethical and spiritual development (olah hati), aesthetic and emotional development (olah rasa), and physical development (olah raga) within a single learning activity. Furthermore, they were able to clearly distinguish Deep Learning as a pedagogical approach from Deep Learning in the context of artificial intelligence. This represents a significant achievement considering that Saputra et al. (2025) reported conceptual overlap in approximately 32% of studies conducted in Indonesia.

Mastery of 6C Competencies in Deep Learning

The analysis of participants' mastery of the 6C competencies revealed a consistent pattern: the dimensions of Character and Citizenship were relatively easier for participants to internalize, whereas Critical Thinking and Creativity were the most vulnerable to conceptual misunderstanding, a finding independently confirmed by all facilitators.

In the Character dimension, participants understood character development as the internalization of moral values through direct experience and reflection rather than as a separate program detached from the learning process, consistent with Lickona's (1991) framework. In the Citizenship dimension, participants' understanding evolved toward greater social awareness and active community participation. Regarding Collaboration and Communication, participants demonstrated mastery of cooperative learning techniques, authentic rubric-based assessment, and the development of multimodal communication skills.

In contrast, Critical Thinking was frequently oversimplified to merely the ability to answer difficult questions, without fully understanding its substantive meaning: the capacity to analyze information and make evidence-based decisions. Similarly, creativity was narrowly defined as the production of physical artifacts, whereas, within the 6C framework, it encompasses divergent thinking skills for generating innovative solutions. These findings are consistent with Handayani et al. (2025) and reinforce the argument of Fullan et al. (2018) that higher-order competencies require more intensive time and reflective experience to be fully internalized.

Changes in Attitudes and Pedagogical Beliefs

Classroom observations involving 16 teachers across eight elementary schools consistently yielded an average score of 3 out of 4 (Good) across all observation indicators. These indicators included the implementation of Deep Learning principles, application of 6C competencies, changes in teacher roles, student engagement, and the quality of instructional planning documents. A noticeable shift was observed in teachers' roles, from knowledge transmitters to facilitators who utilized guiding questions and specific feedback, although this transformation had not yet become fully consistent.

A shift was also evident in participants' conception of deep learning, from merely remembering facts to understanding, applying, and reflecting on knowledge in real-life contexts. This finding aligns with Marton and Säljö's (1976) framework regarding the deep approach to learning. School principals, serving as supporting informants, confirmed a reduction in one-way lecture methods and an increase in the use of guiding questions and project-based learning approaches. These findings support Guskey's (2000) perspective that changes in instructional practices constitute a key indicator of training effectiveness at Kirkpatrick Level 2.

Institutional Support and Determinants of Success

Support from school principals varied considerably. Several schools, such as SDN 47 and SDN 17 Pekanbaru, have developed systematic implementation roadmaps supported by coaching-based supervision and active learning communities. In contrast, other schools continued to rely primarily on improvisational approaches, thereby confirming Fullan's (2001) argument that transformational school leadership functions as a critical moderating variable in sustaining training outcomes.

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The primary obstacles reported included teachers' mindsets oriented toward completing curricular content, large class sizes, and limited facilities. These challenges are structural and require systemic interventions that go beyond isolated training programs. This finding is consistent with Larasati and Asropi (2025), who emphasized the importance of combining individual factors, training design, and school support ecosystems.

Document analysis across the eight schools demonstrated the completeness of all required documentation, including regulatory documents, training designs, evaluation instruments, and post-training follow-up reports. This finding reflects the orderly and accountable administrative system maintained by the Balai Guru dan Tenaga Kependidikan Provinsi Riau.

Table 1. Summary of Deep Learning Training Evaluation Results for Elementary School Teachers in Pekanbaru City

Evaluation Dimension	Indicators	Key Findings	Category	Data Sources
Level 1: Reaction - Satisfaction with Content	Relevance, depth, alignment with policy	All teachers (16 respondents) stated that the training content was highly relevant to their actual teaching needs. The explicit linkage to Ministerial Regulation of Education and Culture No. 13/2025 was strongly perceived.	Good	Interviews, Observation
Level 1: Reaction - Facilitator Satisfaction	6C competencies, reflective discussion, and responsiveness	Facilitators were considered competent, responsive, and able to foster reflective and collaborative discussions. An andragogical approach was consistently applied.	Good	Interviews, Observation
Level 1: Reaction - Methods and Media	Method variation, quality of learning materials, and digital technology	Group discussions and simulation methods were perceived as the most effective. Learning materials were easy to understand. However, technical issues related to internet connectivity were reported.	Good	Interviews, Documentation

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Evaluation Dimension	Indicators	Key Findings	Category	Data Sources
Level 1: Reaction - Implementation	Facilities, time management, and administrative support	Time management was generally good, though complaints were raised about the physical facilities (hot rooms, poor sound insulation). Administrative support was generally adequate.	Fair	Interviews
Level 1: Reaction - Motivation & Self-Efficacy	Enthusiasm, openness to paradigm shift, and implementation readiness	Motivation was high, and most participants showed openness to paradigm change. However, concerns remained regarding classroom management in large classes and time allocation.	Good	Interviews
Level 2: Learning - Core Concepts of Deep Learning	Mindful, meaningful, joyful learning; 4 holistic dimensions; DL pedagogy vs AI	Understanding of the mindful, meaningful, joyful philosophy and the four holistic dimensions was good. All participants were able to distinguish pedagogical Deep Learning from AI.	Good	Interviews, Observation
Level 2: Learning - Mastery of 6C	Character, Citizenship, Collaboration, Communication, Creativity, Critical Thinking	Character and Citizenship were well understood. Critical Thinking and Creativity were most frequently misunderstood (often overly narrowed). Collaboration and communication were in the good category.	Fair	Interviews, Observation

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Evaluation Dimension	Indicators	Key Findings	Category	Data Sources
Level 2: Learning - Pedagogical Attitude Change	Teacher role shift, depth of learning meaning, and self-efficacy	A clear shift from transmitter to facilitator roles was observed. Classroom observations showed an average score of 3/4 across all indicators. Self-efficacy increased significantly.	Good	Interviews, Observation

CONCLUSIONS AND RECOMMENDATION

The evaluation of the Deep Learning training program for elementary school teachers in Pekanbaru City using the Kirkpatrick Level 1 and Level 2 model demonstrated positive and meaningful outcomes. At Level 1, all dimensions of participants' reactions were categorized as good to very good, with the highest levels of satisfaction observed in the facilitator and participant motivation dimensions. At Level 2, participants demonstrated significant improvement in their understanding of the mindful, meaningful, and joyful philosophy and in the integration of the 6C competencies, although the dimensions of Critical Thinking and Creativity remained vulnerable to oversimplification.

A pedagogical shift from a transmissive to a more facilitative approach was also observed, with an average score of 3 out of 4 across all indicators. The primary contribution of this study lies in integrating 6C indicators as Level 2 Kirkpatrick success criteria within the context of elementary school teachers, thereby representing a theoretical synthesis not identified in previous studies.

As a recommendation, future training programs should strengthen post-training assistance through continuous coaching, intensify the reinforcement of the Critical Thinking and Creativity dimensions, and encourage all school principals to develop systematic implementation roadmaps while activating teacher learning communities as sustainable support ecosystems.

Credit authorship contribution statement

First Author: Designed the research proposal and study framework; conducted data collection; processed and analyzed the data; prepared the initial manuscript draft; formatted the manuscript according to journal guidelines; managed citations and reference list; revised the manuscript based on the supervisor's feedback; addressed reviewer and editor comments during the publication process; and ensured data integrity and research originality throughout the study.

Second Author: Provided conceptual and academic guidance for the research; supervised the development of the conceptual framework and research methodology; contributed to the analysis and interpretation of findings; reviewed and edited the scholarly content of the manuscript; ensured its academic quality, originality, and suitability for publication; guided manuscript alignment with journal standards; directed revisions based on peer review feedback; ensured compliance with publication ethics; supported the submission, revision, and publication process; and provided academic mentoring throughout the student publication process.

Declaration of competing interest

The authors declare that this research and the preparation of this article were conducted in the absence of any conflicts of interest, whether financial or personal relationships, that could potentially influence the research process or the findings presented.

Ethical declaration

This study was conducted in accordance with applicable research ethics principles. Prior to the commencement of the study, all participants provided informed consent after receiving a clear explanation of the study's objectives, procedures, and their right to withdraw from the research at any time without any consequences.

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