

Conceptualizing Deep Learning Approach in Primary Education: Integrating Mindful, Meaningful, and Joyful

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ABSTRACT

According to PISA 2022, Indonesian students scored 359 in reading, 366 in mathematics, and 19 in creative thinking, all well below the OECD average of 476, 472, and 33, respectively. The era of instant information from artificial intelligence (AI) and social media has also contributed to the decline in students' cognitive quality. Therefore, mindful, meaningful, and joyful deep Learning has been implemented as a learning approach in Indonesia. This study aims to examine how the concept and application of mindful, meaningful, and joyful deep Learning as a learning approach is implemented in primary education in Indonesia. The study was conducted systematically by analysing five scientific articles published between 2022 and 2025. Literature searches were conducted through Google Scholar, Research Gate, and Sinta, with the selection process following the PRISMA flow. The research findings indicate that deep Learning effectively promotes the development of critical, creative, reflective, and emotional thinking patterns and student engagement when applied contextually by aligning with students' life experiences. However, challenges such as teacher readiness and limitations in infrastructure and learning technology remain obstacles to implementation. These findings emphasise the importance of large-scale empirical studies on mindful, meaningful, and joyful deep learning approaches in the context of primary education as a reference for educational institutions in implementing them.

Keywords: *deep Learning, primary education, mindful, meaningful, joyful.*

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INTRODUCTION

The deep learning approach in education has been gaining increasing attention in Indonesia, in line with the government's efforts to promote Learning that emphasizes character development and 21st-century competencies. The Minister of Primary and Secondary Education, Abdul Mu'ti, stated that the implementation of deep Learning has been thoroughly reviewed and will soon be applied through model schools, accompanied by teacher training and the development of supporting regulations (Kemendikbudristek, 2024)¹ Some of the public thought deep Learning was a new curriculum, but deep Learning is an approach to Learning.

The current information age is full of answers, but they are still superficial regarding scientific knowledge. Although problems can be researched through Google, YouTube, and especially AI, there is still a lot of misinformation, biased opinions, and meaningless content. Children tend to prefer short videos on social media, which can affect their cognitive development.²

The 2022 PISA (Programme for International Student Assessment) results show that Indonesian students' achievements are still far below the OECD (Organisation for Economic Co-operation and Development) standard. Regarding reading literacy, the average score for Indonesian students is 359 points, while the OECD average is 476 points, a difference of 117 points. Regarding numeracy (mathematics), Indonesia's score is 366 points, lagging 106 points behind the OECD average of 472 points. Additionally, in the Higher Order Thinking Skills (HOTS) category, measured through creative thinking, Indonesian students scored 19 out of 60 points, while the OECD average was 33 points, indicating a gap of 14 points.³ Statistical results related to literacy, numeracy, and higher-order thinking skills (HOTS) among students in Indonesia also indicate that there is a significant need for improvement. (Education Assessment Centre, 2024). This statement provides some insight into the rationale behind implementing deep Learning.

Deep Learning, which is emphasised by the Minister of Primary and Secondary Education, Abdul Mu'ti, highlights the importance of teaching methods that focus on deep understanding, enabling students to not only memorise information but also absorb knowledge in a meaningful way.⁴ This statement aligns with Jiang's (2022) research findings, which show that students engaged in deep Learning demonstrate better understanding, higher motivation, and a more robust ability to apply knowledge.⁵ This makes students better prepared to face complex challenges and enables them to think critically and reflectively

¹ Kemendikbudristek, "Pemerintah Akan Terapkan Deep Learning Di Sekolah Model: Abdul Mu'ti Paparkan Rencana Pelatihan Guru Dan Penyusunan Regulasi" (Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2024).

² Andini Eka Putri et al., "Dampak Video Pendek Terhadap Perkembangan Kognitif Dan Bahasa Pada Masa Early Childhood," *Flourishing Journal* 4, no. 5 (2024): 232–44, <https://doi.org/10.17977/um070v4i52024p232-244>.

³ OECD, *PISA 2022 Results (Volume II): Creative Minds, Creative Schools* (OECD Publishing, 2024), <https://doi.org/10.1787/54f5deac-en>.

⁴ Riska Putri, "Inovasi Pendidikan Dengan Menggunakan Model Deep Learning Di Indonesia," *Jurnal Pendidikan Kewarganegaraan Dan Politik (JPKP)* 2, no. 2 (2024): 69–77.

⁵ Artha Mahindra Diputera et al., "Memahami Konsep Pendekatan Deep Learning Dalam Pembelajaran Anak Usia Dini Yang Meaningful, Mindful Dan Joyful : Kajian Melalui Filsafat Pendidikan" 10, no. 2 (2024): 108–20.

about the material they are learning. The importance of the role of teachers in creating a learning environment that supports exploration, problem solving, and collaboration is a factors that strengthen students' active cognitive engagement in the learning process.⁶

The concept of deep Learning was first introduced by Marton and Säljö (1976), who distinguished between surface learning and deep Learning, where deep Learning is characterised by efforts to understand meaning, connect concepts, and apply them in new contexts. Further development by Biggs and Collis through the SOLO taxonomy (Structure of the Observed Learning Outcome) shows the depth of understanding from the unistructural stage to the extended abstract stage, reflecting complex thinking skills. Furthermore, Michael Fullan (2014; 2018) developed a deep learning framework based on 21st-century global competencies known as 6C: character, citizenship, collaboration, communication, creativity, and critical thinking. This framework is a reference for applying deep Learning in Indonesia by integrating mindfulness, meaningfulness, and joyfulness.

Several studies have explored deep Learning with Meaningful, Mindful, And Joyful, such as the paper by Feriyanto & Anjariyah (2024) on the Deep Learning Approach Through Meaningful, Mindful, and Joyful.⁷ Another similar study on Understanding the Concept of the Deep Learning Approach in Early Childhood Education that is Meaningful, Mindful, and Joyful: A Study Through the Philosophy of Education (Diputera, 2024). However, some of these studies are still conceptual. Some other studies also discuss the application of deep Learning, such as Nurhasanah, 2025: The Application of the Deep Learning Approach in Learning at Elementary Schools in Bekasi City, and Eka Fitri Hastuti, 2025: Enhancing Early Literacy Skills for Grade 1A Students at MIN 2 Metro through the Deep Learning Approach in Indonesian Language Learning. While the application does discuss deep Learning, it does not yet incorporate the Deep Learning Approach Through Meaningful, Mindful, and Joyful, as mentioned by the Minister of Education of the Republic of Indonesia.

Based on the studies mentioned above, the discussion of deep learning theory still appears superficial, and a more in-depth theory is needed to explain the framework and journey of deep Learning as a learning approach. Additionally, deep Learning is associated with the worlds of technology, machines, and AI; on the other hand, deep Learning is also considered a learning approach with various variations. Therefore, to clarify the concept of deep Learning and its pedagogical application, research is needed on the term deep Learning from various contexts, including the application of deep Learning with a meaningful, attentive, and enjoyable approach, as mentioned, which is still not evident in the research cited by the researchers.

Based on these reasons, what exactly is the concept of Deep Learning Approach Through Meaningful, Mindful, and Joyful? Then, how can deep learning with a meaningful,

⁶ Ruihong Jiang, "And Promoting Deep Learning in Language Education : A Survey on Chinese College Students ' Deep Learning in the Online EFL Teaching Context," n.d.

⁷ F Feriyanto and Deka Anjariyah, "Deep Learning Approach Through Meaningful, Mindful, and Joyful Learning : A Library Research," *Electronic Journal of Education, Social Economics and Technology* 5, no. 2 (2024): 208–12.

mindful, and joyful approach be applied pedagogically in educational institutions, including at the elementary level? This question will be discussed in this article.

METHOD

This study employs a library research approach and is analyzed through a qualitative synthesis method guided by the PRISMA framework. PRISMA is a reporting guideline to ensure transparency and replicability across systematic stages, including identification, screening, eligibility, and synthesis of relevant literature. This review focuses on deep Learning, primarily through mindful, meaningful, and enjoyable Learning within primary education settings, drawing from qualitative studies, quantitative research, and conceptual literature.

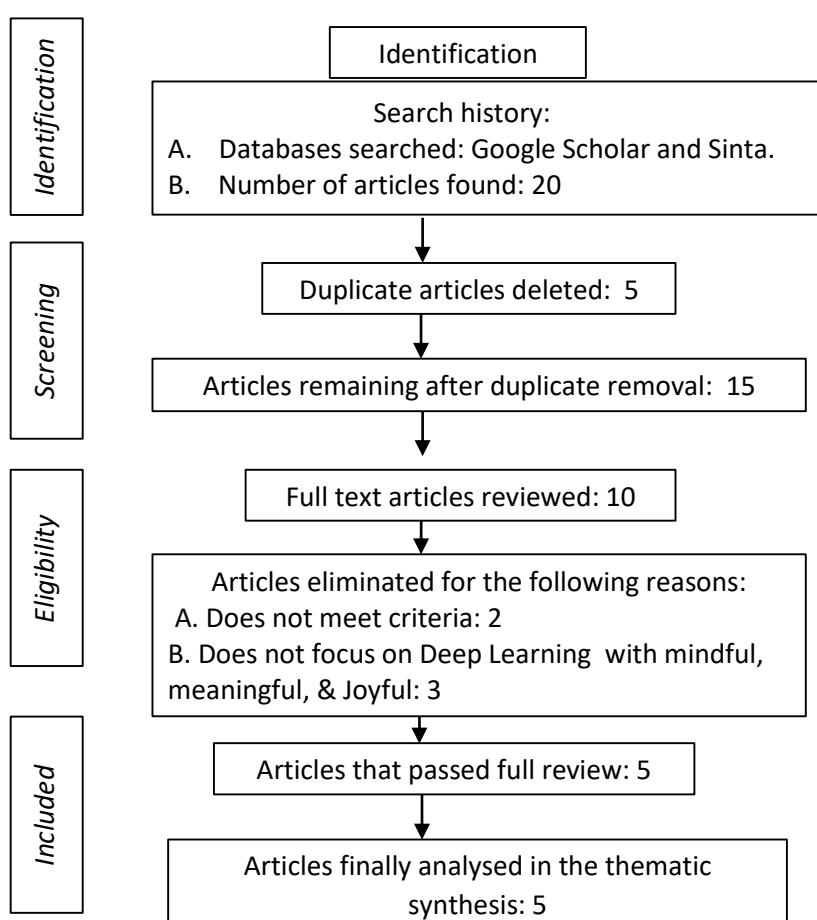


Figure 1. Prisma Diagram

The literature selection process was documented using a PRISMA flow chart that visualises the process of identifying, screening, eligibility, and inclusion of research. Researchers initially searched various literature sources using scientific databases such as Google Scholar and Sinta. The main keywords used included: "deep learning in education," "mindful learning," "meaningful learning," "joyful learning," and "primary education". This step yields many potential articles related to the research topic. An initial list of relevant

articles from various platforms, including empirical (quantitative and qualitative) and conceptual articles.

After the initial identification phase, the articles underwent a screening process based on several predetermined criteria. These included the year of publication, limited to works published between 2022 and 2025, and the type of article restricted to peer-reviewed journal articles, conference proceedings, and scholarly reviews. The language of publication was also considered, with only articles written in English and/or Indonesian included in the analysis. In addition, the articles had to be published in journals indexed by SINTA levels 1 to 6. To ensure thematic relevance, the titles and abstracts of the selected works were examined to exclude articles that did not pertain to deep Learning in elementary education, particularly those that lacked reference to mindful, meaningful, or joyful learning approaches.

DISCUSSION

Result

This study aims to identify deep Learning as a learning approach in primary education from several Sinta articles that have been written. The search results showed articles on deep Learning with various discussions. Five mindful, meaningful, and joyful deep Learning articles were presented based on the screening and feasibility results. Thus, a list of articles was obtained and presented in **Table 1**.

An analysis of five articles examining the deep learning approach in primary education shows thematic consistency in positioning deep Learning as a pedagogical strategy that emphasises cognitive, emotional, and reflective engagement among students. The study by Feriyanto & Anjariyah (2024) highlights the integration of meaningful, mindful, and joyful Learning as the foundation for holistic Learning that addresses learners' affective and intellectual dimensions. This finding is confirmed and further explored by Iffan & Ahmad Rofi (2024) through an axiological analysis, which shows that deep Learning not only supports concept mastery but also fosters ownership of Learning, personal meaning-making, and adaptation to digital contexts and students' life values.

Meanwhile, two applied studies by Arthadewi et al. (2025) and Mutmainnah & Adrias (2025) provide empirical evidence that deep Learning can enhance active participation, conceptual understanding, and a conducive learning environment, despite constraints such as limited curriculum time and technological facility gaps.

The literature review by Hidayat & Haryati (2025) emphasises that teacher readiness and the learning environment are the primary determinants of the effectiveness of deep learning implementation. A synthesis of these findings concludes that deep Learning is effective when applied contextually, supported by adaptive learning design, relevant instructional materials, and enhanced teacher capacity to create active, reflective, and meaningful learning experiences for students.

Table 1. Results of Deep Learning Article Search List with mindful, meaningful, and joyful

Author(s)	Title	Journal	Indexed	Year
⁸ Feriyanto	<i>Deep Learning Approach Through Meaningful, Mindful, and Joyful.</i>	Electronic Journal of Education, Social Economics and Technology	Sinta 3	2024
⁹ Iffan, Ahmad Rofi	<i>Kajian Aksiologi Pemebelajaran Berbasis Deep Learning Pada Pendidikan Dasar</i>	Pendas: Jurnal Ilmiah Pendidikan Dasar	Sinta 4	2024
¹⁰ Arthadewi,	<i>Implementasi Pendekatan Deep Learning dalam Peningkatan Kualitas Pembelajaran di Sekolah Dasar Negeri 1 Wulung, Randublatung, Blora</i>	IRJE (Indonesian Research Journal on Education)	Sinta 5	2025
¹¹ Adrias dkk	<i>Implementasi Pendekatan Deep Learning Terhadap Pembelajaran Matematika di Sekolah Dasar (SD)</i>	Jurnal Ilmiah Pendidikan Dasar	Sinta 4	2025
¹² A. Gafar Hidayat	<i>Analisis Efektivitas Pembelajaran Menggunakan Pendekatan Deep Learning Pada Sekolah Dasar (SD)</i>	Jurnal Pendidikan Volume 9 No 2 Tahun 2025	Sinta 6	2025

Synthesizing these findings, deep Learning is effective when applied contextually, supported by adaptive instructional design, relevant materials, and empowered teachers capable of creating active and meaningful learning experiences.

Discussion

1. Theoretical Clarification

The concept of deep Learning used in this study refers to the thinking of Marton & Säljö, as cited by Parpala et al. (2013).

*"...The deep approach is characterized by an intention to understand ideas for oneself and to apply knowledge to new situations. Students adopting this approach are interested in the subject matter and relate ideas to previous knowledge and experience. They critically evaluate arguments and evidence, and monitor their understanding during the learning process."*¹³

This emphasises students' efforts to understand deeply, connect new knowledge with previous experiences, and critically evaluate the information received. This approach is

⁸ Feriyanto and Anjariyah.

⁹ Ahmad Rofi Suryahadikusumah² 12 Universitas Islam Negeri Sultan Maulana Hasanuddin Banten Iffan Ahmad Gufron¹ and Alamat, "KAJIAN AKSILOGI PEMEBELAJARAN BERBASIS DEEP LEARNING PADA PENDIDIKAN DASAR," *Pendas : Jurnal Ilmiah Pendidikan Dasar* 09 Nomor 0, no. 4 (2024): 556–67, <https://doi.org/10.1134/s0514749219040037>.

¹⁰ Endang Wuryandini³ Artadhewi Adhi Wijaya¹, Titik Haryati², "Indonesian Research Journal on Education : Jurnal Ilmu Pendidikan," *Al on Education Indonesian Research Journal on Education* 5, No.1 (2025): 451–57.

¹¹ adrias dkk Nurul Mutmainnah, "IMPLEMENTASI PENDEKATAN DEEP LEARNING TERHADAP PEMBELAJARAN MATEMATIKA DI SEKOLAH DASAR," *Pendas : Jurnal Ilmiah Pendidikan Dasar* 10 Nomor 0 (2025): 85–87.

¹² A Gafar Hidayat and Tati Haryati, "P-ISSN E-ISSN" 9, no. 2 (2025): 126–39.

¹³ Anna Parpala, Sari Lindblom-Ylänne, and E Komulainen, "Assessing Students' Experiences of Teaching–Learning Environments and Approaches to Learning: Validation of a Questionnaire in Different Countries and Varying Contexts," *Learning Environments Research*, 2013.

oriented not only towards cognitive achievement but also towards reflective processes and forming meaningful understanding.

The essence of the deep learning approach emphasizes understanding meaning, relevance to previous experiences, and critical evaluation of the material studied. In line with deep Learning from Marton and Säljö in John Biggs' paper entitled Teaching for quality learning at university: What the student does, deep Learning is effective Learning can be realized when students actively participate in learning activities, which allows them to develop understanding through connections of ideas that they create themselves, rather than just passively receiving information. The teacher's job is to create an atmosphere that supports a meaningful learning experience, not just delivering the subject matter.¹⁴

The concept of Deep Learning introduced by Marton and Säljö encourages students to immerse themselves in the lesson's content, relate it to everyday experiences, and strengthen analytical thinking skills. In the process of deep Learning, students not only receive material but also proactively try to understand, analyze, and assess the information. In other words, deep Learning is like being a detective looking for answers to significant questions, not just as a reader remembering the answers provided.¹⁵

In the context of primary education that continues to evolve towards a 21st-century learning orientation, the concept of deep Learning is not only understood as a cognitive approach that emphasises meaningful understanding and critical reflection as formulated by Marton & Säljö, but has also undergone pedagogical expansion towards holistic, contextual, and learner-centred Learning. One relevant and adaptive approach to this dynamic is the application of deep Learning with three main elements: mindful, meaningful, and joyful Learning. These three components form an important framework for creating a learning process that sharpens intellectual skills and touches on students' emotional, social, and character aspects.

These three elements are rooted in the approach developed by Michael Fullan (2014) through the concept of New Pedagogies for Deep Learning, which involves six core competencies or 6Cs: Character, Citizenship, Collaboration, Communication, Creativity, and Critical Thinking. The mindful element relates to learning awareness and self-regulation; meaningful relates to the connection between learning materials and students' real-life experiences; and joyful refers to creating a pleasant learning environment that stimulates emotional engagement. All three are important foundations in strengthening the effectiveness of deep Learning that is relevant to the characteristics of Generation Z and Alpha students. The following elaboration provides a more detailed explanation of each conceptually and practically important element within the deep Learning framework in primary education.

¹⁴ (Biggs & Tang, 2011)

¹⁵ Effy Mulyasari Boenga Jenny Hendrianty, Aldi Ibrahim, Sofyan Iskandar, "Membangun Pola Pikir Deep Learning Guru Sekolah Dasar Boenga" 12 (2016): 1349–58.

a. The Concept of Mindfulness in Deep Learning

Mindful Learning is learning that prioritises full attention throughout the learning process. Full awareness in learning new things encompasses several topics, is sensitive to how one connects with the surrounding environment, and can stimulate creativity. This means that mindful Learning can train children's ability to focus while learning, which is very beneficial for their cognitive development. Mindful Learning is suitable for 21st-century Learning, which is characterised by creativity, communication, collaboration, and critical thinking.¹⁶ This is very important for Generation Z and Alpha children in training their focus and attention in challenging learning situations.

Some applications of mindful Learning in deep Learning can be done with several techniques, including 1) Mindful Awareness Training (Full Awareness Strengthening Programme), which is a 10-minute daily audio-based learning programme that can help train children's focus and attention, 2) Story and Game-Based Learning, which involves presenting stories that can be discussed and acted out in class, and 3) Integration of Artificial Intelligence, meaning Learning that can be integrated with AI.¹⁷ This is a small example of several other techniques that can be developed in applying mindful Learning.

b. The Concept of Meaningful Learning in Deep Learning

Meaningful Learning is a theory of learning proposed by David Ausubel, which refers to Learning in which a person can connect new knowledge with knowledge they have already acquired.¹⁸ Meaningful Learning requires Teaching beyond the simple presentation of factual knowledge, and assessment tasks require students to do more than remember or recognise factual knowledge.¹⁹ The ability to learn independently is the ultimate goal of meaningful Learning. Meaningful Learning is part of a pattern of active, solution-oriented (able to solve problems) and contextual Learning.²⁰

An applied example of meaningful Learning, as stated by Mayer, such as in arithmetic operations, after presenting the material, the educator does not immediately give arithmetic problems. However, the educator can first relate it to the students' daily lives so that they can apply the concepts from the material independently.

c. Joyful Learning in Deep Learning

Joyful Learning emphasises students' happiness and emotional engagement as the primary focus of the learning process. This strategy seeks to create a pleasant learning atmosphere, where students feel comfortable, motivated, and enthusiastic about the Teaching they receive.²¹ This approach is also in line with the educational philosophy of Ki Hadjar Dewantara, which emphasises the importance of Learning that is enjoyable, liberating, and oriented towards the holistic development of students.²²

¹⁶ Kadek Sonia Piscayanti, "The Power of Mindful Learning in Professional Development Course," *SHS Web of Conferences* 42 (2018): 00100, <https://doi.org/10.1051/shsconf/20184200100>.

¹⁷ Feriyanto and Anjariyah, "Deep Learning Approach Through Meaningful, Mindful, and Joyful Learning : A Library Research."

¹⁸ Nurul Atik Hamida, Lau Han Sein, and Wahidah Ma, "IMPLEMENTASI TEORI MEANINGFULL LEARNING DAVID AUSUBEL DALAM PEMBELAJARAN SEJARAH KEBUDAYAAN ISLAM DI Universitas Islam Negeri Sunan Ampel Surabaya Abstrak" 6, no. 4 (2022): 1386–1400, <https://doi.org/10.35931/am.v6i4.1294>.

¹⁹ Richard E Mayer, "Rote Versus Meaningful Learning 1" 41, no. 4 (2002): 226–33.

²⁰ Hamida, Sein, and Ma, "IMPLEMENTASI TEORI MEANINGFULL LEARNING DAVID AUSUBEL DALAM PEMBELAJARAN SEJARAH KEBUDAYAAN ISLAM DI Universitas Islam Negeri Sunan Ampel Surabaya Abstrak."

²¹ Caraka Putra Bhakti et al., "JOYFUL LEARNING : ALTERNATIVE LEARNING MODELS TO IMPROVING STUDENTS' HAPPINESS," *Jurnal Varidika* 30, No. 2 (2018): 30–35, <https://doi.org/DOI:10.23917/varidika.v30i2.7572>.

²² Ningrum Novita Rahayu, Universitas Trunojoyo Madura, and Perumahan Telang Inda, "Analisis Filsafat Pendidikan Ki Hadjar Dewantara Sebagai Landasan Di Sekolah Dasar Untuk Mencapai Terciptanya Joyfull Learning," *JURNAL MEDIA AKADEMIK Edisi Desember / 2*, no. 12 (2024).

The application of joyful Learning can incorporate play, collaboration, and creativity into the learning process. Joyful Learning can be applied through integrating performing arts/role playing, dance, song, and the like, game-based Learning, and AI integration.

2. Synthesis of Findings

The five reviewed articles elaborate on the conceptual and applicative aspects of deep Learning in primary education in various ways. Feriyanto & Anjariyah (2024) propose an arts- and games-based learning model that integrates mindful awareness and joyful engagement. This demonstrates the application of mindful learning through techniques such as story-based Learning and interactive games, which align with Fullan's holistic approach. The research by Feriyanto and Anjariyah (2024) shows how the concept of deep Learning with the integration of mindful, meaningful, and joyful learning works. First, meaningful Learning emphasises the connection between new knowledge and prior understanding, fostering critical thinking and problem-solving skills. Second, mindful Learning requires full attention and reflection, enhanced through mindfulness training and AI-based personalised Learning. In contrast, joyful Learning cultivates emotional engagement through art-based activities, games, and gradual Learning. Together, these form a holistic framework that supports conceptual understanding, creativity, and overall motivation among learners.

Iffan & Ahmad Rofi (2024) make a strong axiological contribution by emphasising that deep Learning should enable students to take ownership of their learning process, develop metacognition, and build understanding through authentic reflective interaction. This approach strongly aligns with the mindful and meaningful dimensions and emphasises adaptation to the digital environment. Iffan & Ahmad Rofi (2024) position the concept of deep Learning as a transformation from traditional learning approaches to more personalised, reflective, and meaningful strategies. Deep Learning is defined as Learning that enables students to take ownership of their learning process, encouraging them to think critically and metacognitively, and to build understanding through active, authentic, and collaborative engagement. This approach emphasises higher-order cognitive aspects (such as analysis and problem-solving) and integrates values, motivation, and students' life experiences within a joyful, mindful, and meaningful framework. The success of deep Learning depends on the quality of contextual teaching materials and the ability of teachers and students to adapt to the digital learning environment, not merely on the sophistication of the technology itself.

Applied studies by Arthadewi et al. (2025) at SDN 1 Wulung and Mutmainnah & Adrias (2025) in mathematics learning show tangible results in improving students' conceptual understanding and active participation. Although the results are promising, both are contextual and have not been supported by large-scale experimental designs. Their findings underscore the importance of collaboration and reflection as drivers of joyful Learning and critical thinking. A case study by Arthadewi et al. (2025) at SDN 1 Wulung, Randublatung, Blera, emphasised implementing a deep learning approach by integrating meaningful, mindful, and joyful Learning. The results showed a significant improvement in learning quality, characterised by active student engagement, enhanced understanding of the

material, and a more positive and reflective learning environment. A study by Mutmainnah and Adrias (2025) provides examples of deep learning approaches applied to mathematics learning in primary schools. The results of these applications show that deep learning approaches can improve students' conceptual understanding and active engagement through interactive activities such as simulations and experiments. Although effective in creating meaningful and enjoyable learning experiences, the main challenges include curriculum time constraints and technological access gaps among students.

Table 2. Results of the Study Findings 5 Deep Learning Articles

Author(s)	Title	Discussion	Connection to Theory
Feriyanto & Anjariyah (2024)	<i>Deep Learning Approach Through Meaningful, Mindful, and Joyful</i>	Integrating arts, play, and reflection in a holistic deep learning model.	Supports the Mindful, Meaningful, Joyful Learning framework and expands on Fullan's 6Cs, especially character, creativity, and collaboration.
Iffan & Ahmad Rofi 2024	<i>Axiological Study of Deep Learning-Based Instruction</i>	Analysis of ethical and philosophical dimensions of Learning; emphasizes ownership and reflective Learning.	Aligns with Marton & Säljö's deep learning theory; emphasizes meaningful depth and personal engagement.
Arthadewi et al. 2025	<i>Implementation of Deep Learning at SDN 1 Wulung</i>	Active and reflective approaches enhance student participation and understanding in real classroom settings.	Emphasizes joyful and meaningful Learning; supports the principle of meaning construction.
Mutmainnah & Adrias 2025	<i>Deep Learning in Primary School Mathematics</i>	Promotes conceptual understanding through simulations and experiments.	Aligns with Ausubel's theory of meaningful Learning and supports contextual Learning and problem solving.
Hidayat & Haryati (2025)	<i>Effectiveness of Deep Learning in Primary Schools (Literature Review)</i>	Highlights the importance of teacher readiness and resources in implementing deep Learning effectively.	Reinforces structural factors in Fullan's theory, especially new pedagogies and system support.

Research by Hidayat and Haryati (2025) analysed the effectiveness of the deep learning approach in primary schools through a systematic literature review. The results of the study showed that the effectiveness of deep Learning is highly dependent on teacher readiness and learning facilities. The suitability of deep learning-based learning frameworks is considered to have potential, but their implementation still faces limitations in terms of resources and practical implementation in the field. Meanwhile, a literature study by Hidayat & Haryati (2025) adds a realistic perspective by highlighting that the effectiveness of deep Learning is greatly influenced by teacher readiness and educational infrastructure, not solely by the pedagogical approach. They emphasise the need for teacher training to enable them to manage classrooms that support deep Learning, in line with the 6Cs values.

The following table summarises the analysis results of the five articles on deep Learning in primary education. The table is organised systematically to reflect the main contributions, the focus of deep learning elements (mindful, meaningful, joyful), and the approaches used.

3. Limitations and Future Research

Large-scale pilot projects have not supported most of the articles analysed and are mostly narrative or case studies. Therefore, generalisations from the findings need to be treated with caution. For example, although game-based Learning by Feriyanto & Anjariyah shows positive results, its effectiveness must still be tested through controlled trials and cross-regional replication.

In addition, the findings by Mutmainnah & Adrias mention the limitations of the curriculum and the technology gap, which need to be further mapped as intermediate variables in the effectiveness of deep Learning. Future research should develop contextual implementation models and evaluate deep learning approaches through quasi-experimental and longitudinal studies to validate their long-term impact on learning outcomes and character formation.

CONCLUSION

This review confirms that integrating mindful, meaningful, and joyful Learning within the deep learning framework offers a coherent pedagogical strategy to enhance cognitive, emotional, and reflective engagement in primary education. The articles analyzed consistently emphasize student-centered approaches that foster personal meaning-making, critical thinking, and collaborative learning environments. These findings imply that effective implementation of deep Learning requires contextual adaptation, teacher training, and alignment of instructional design with students' lived experiences. However, limitations remain, particularly in generalizability due to the absence of large-scale empirical studies and constraints in under-resourced educational contexts. Future research should focus on experimental validation across diverse classroom settings to evaluate long-term impacts. This review is a foundational reference for advancing deep learning discourse and practice in primary education.

REFERENCES

- Andini Eka Putri, Fraditya Lexcy Aurilio, Muhammad Sifa Alayubi, and Raissa Dwifandra Putri. "Dampak Video Pendek Terhadap Perkembangan Kognitif Dan Bahasa Pada Masa Early Childhood." *Flourishing Journal* 4, no. 5 (2024): 232–44. <https://doi.org/10.17977/um070v4i52024p232-244>.
- Artadhewi Adhi Wijaya¹, Titik Haryati², Endang Wuryandini³. "Indonesian Research Journal on Education : Jurnal Ilmu Pendidikan." *Al on Education Indonesian Research Journal on Education* 5, No.1 (2025): 451–57.
- Bhakti, Caraka Putra, Muhammad Alfarizqi, Nizamuddin Ghiffari, and Khansa Salsabila. "JOYFUL LEARNING : ALTERNATIVE LEARNING MODELS TO IMPROVING STUDENTS 'HAPPINESS.'" *Jurnal Varidika* 30, No. 2 (2018): 30–35.

- <https://doi.org/DOI:10.23917/varidika.v30i2.7572>.
- Boenga Jenny Hendrianty, Aldi Ibrahim, Sofyan Iskandar, Effy Mulyasari. "Membangun Pola Pikir Deep Learning Guru Sekolah Dasar Boenga" 12 (2016): 1349–58.
- Chaterin, John Biggs. *Teaching for Quality Learning at University: What the Student Does*. (4th ed.). New York: McGraw-Hill Open University Press, 2011.
- Diputera, Artha Mahindra, Gita Noveri Eza, Pendidikan Guru, Pendidikan Anak, Usia Dini, Fakultas Ilmu Pendidikan, Universitas Negeri Medan, Akademi Kebidanan, and Madina Husada. "Memahami Konsep Pendekatan Deep Learning Dalam Pembelajaran Anak Usia Dini Yang Meaningful , Mindful Dan Joyful : Kajian Melalui Filsafat Pendidikan" 10, no. 2 (2024): 108–20.
- Feriyanto, F, and Deka Anjariyah. "Deep Learning Approach Through Meaningful, Mindful, and Joyful Learning : A Library Research." *Electronic Journal of Education, Social Economics and Technology* 5, no. 2 (2024): 208–12.
- Hamida, Nurul Atik, Lau Han Sein, and Wahidah Ma. "IMPLEMENTASI TEORI MEANINGFULL LEARNING DAVID AUSUBEL DALAM PEMBELAJARAN SEJARAH KEBUDAYAAN ISLAM DI Universitas Islam Negeri Sunan Ampel Surabaya Abstrak" 6, no. 4 (2022): 1386–1400. <https://doi.org/10.35931/am.v6i4.1294>.
- Hidayat, A. Gafar, and Tati Haryati. "P-ISSN E-ISSN" 9, no. 2 (2025): 126–39.
- Iffan Ahmad Gufron¹, Ahmad Rofi Suryahadikusumah² 12 Universitas Islam Negeri Sultan Maulana Hasanuddin Banten, and Alamat. "KAJIAN AKSIOLOGI PEMEBELAJARAN BERBASIS DEEP LEARNING PADA PENDIDIKAN DASAR." *Pendas : Jurnal Ilmiah Pendidikan Dasar* 09 Nomor 0, no. 4 (2024): 556–67. <https://doi.org/10.1134/s0514749219040037>.
- Jiang, Ruihong. "And Promoting Deep Learning in Language Education : A Survey on Chinese College Students ' Deep Learning in the Online EFL Teaching Context," n.d.
- Kemendikbudristek. "Pemerintah Akan Terapkan Deep Learning Di Sekolah Model: Abdul Mu'ti Paparkan Rencana Pelatihan Guru Dan Penyusunan Regulasi." Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi, 2024.
- Mayer, Richard E. "Rote Versus Meaningful Learning 1" 41, no. 4 (2002): 226–33.
- Nurul Mutmainnah, Adrias et al. "IMPLEMENTASI PENDEKATAN DEEP LEARNING TERHADAP PEMBELAJARAN MATEMATIKA DI SEKOLAH DASAR." *Pendas : Jurnal Ilmiah Pendidikan Dasar* 10 Nomor 0 (2025): 85–87.
- OECD. *PISA 2022 Results (Volume II): Creative Minds, Creative Schools*. OECD Publishing, 2024. <https://doi.org/10.1787/54f5deac-en>.
- Parpala, Anna, Sari Lindblom-Ylänne, and E Komulainen. "Assessing Students' Experiences of Teaching–Learning Environments and Approaches to Learning: Validation of a Questionnaire in Different Countries and Varying Contexts." *Learning Environments Research*, 2013.
- Putri, Riska. "Inovasi Pendidikan Dengan Menggunakan Model Deep Learning Di Indonesia." *Jurnal Pendidikan Kewarganegaraan Dan Politik (JPKP)* 2, no. 2 (2024): 69–77.
- Rahayu, Ningrum Novita, Universitas Trunojoyo Madura, and Perumahan Telang Inda. "Analisis Filsafat Pendidikan Ki Hadjar Dewantara Sebagai Landasan Di Sekolah Dasar

Untuk Mencapai Terciptanya Joyfull Learning.” *JURNAL MEDIA AKADEMIK Edisi Desember* / 2, no. 12 (2024).

Sonia Piscayanti, Kadek. “The Power of Mindful Learning in Professional Development Course.” *SHS Web of Conferences* 42 (2018): 00100. <https://doi.org/10.1051/shsconf/20184200100>.