



# Early Childhood Education Teachers' Perceptions of 21st Century Learning: Between Concept and Practice

Mariyolin Grace Hande<sup>1</sup>, Yeni Rachmawati<sup>2</sup> ✉, Heny Djoehaeni<sup>3</sup>

Universitas Pendidikan Indonesia, Bandung, Indonesia <sup>(1,2,3)</sup>

DOI: [10.31004/aulad.v9i2.1583](https://doi.org/10.31004/aulad.v9i2.1583)

✉ Corresponding author:  
[yeni\_rachmawati@upi.edu]

## Abstract

21st century learning has become a central demand in early childhood education (ECE), particularly following the implementation of the Kurikulum Merdeka, which emphasizes meaningful learning and holistic competency development. Previous studies have predominantly focused on quantitative measures of teacher readiness, offering limited insight into how teachers interpret and enact 21st century learning in daily practice. This study aims to explore ECE teachers' perceptions and the contextual factors influencing their pedagogical decision-making. This study employed a descriptive phenomenological approach, with data collected through in-depth interviews with eight teachers from four private ECE institutions in Bandung. The data were analyzed using thematic analysis. Findings indicate a gap between conceptual understanding and practice, with teachers' understanding shaped more by teaching experience than by formal theoretical frameworks. Nevertheless, their learning practices reflected the integration of 21st-century skills. The findings also revealed tensions between normative demands and contextual realities and demonstrated how teachers translate 21st-century learning demands into practice under academic pressures and institutional constraints.

**Keywords:** *ECE Teachers' Perceptions, Kurikulum Merdeka, Phenomenology, Teacher Cognition, Twenty-First Century*

## Article Info

Copyright (c) 2026 Mariyolin Grace Hande, Yeni Rachmawati, Heny Djoehaeni  
Received Received 27 February 2026, Accepted 20 April 2026, Published 28 May 2026

## 1. INTRODUCTION

The development of global society in the 21st century demands individuals who possess critical thinking, creativity, communication, and collaboration skills to navigate the complexity of modern life. In this context, early childhood education (ECE) plays a crucial role as a foundational stage for developing these competencies from an early age. Twenty-first century learning in ECE not only emphasizes academic readiness, but also focuses on the development of socio-emotional competence, independence, creativity, and children's adaptability in responding to changing social environments (Thornhill-Miller et al., 2023; Komari & Aslan, 2025).

In line with these demands, educational transformation in Indonesia through the implementation of the Kurikulum Merdeka encourages more flexible, child-centered, and meaningful learning practices. The curriculum emphasizes play-based learning, project activities, exploration, and

the holistic development of children's competencies (Fitriani et al., 2023; Furi et al., 2025; Retnaningsih et al., 2022). Within this framework, teachers are expected not only to facilitate academic learning, but also to create learning environments that support collaboration, communication, creativity, and problem-solving from early childhood. In practice, the implementation of 21st-century learning in ECE is closely related to how teachers interpret curriculum policies and translate them into pedagogical experiences that are developmentally appropriate for young children.

Previous studies have shown that teachers' pedagogical understanding and competence are central factors influencing the successful implementation of 21st-century learning (Ranta et al., 2023). Research in ECE contexts has also highlighted the importance of active participation, play-based learning, and experiential interaction in developing children's 21st-century competencies (Fleer, 2021; Nikkola et al., 2024). However, most previous studies tend to focus on teacher readiness, curriculum implementation, and the integration of 4C skills through quantitative approaches and competency measurements (Aulia, 2022; Niu et al., 2021; Whindayati et al., 2025). Other studies have examined the implementation of Kurikulum Merdeka and deep learning approaches in ECE settings, particularly regarding instructional strategies and curriculum adaptation (Paramita et al., 2025; Dwijantie, 2025).

Despite the growing body of research, limited studies have explored how ECE teachers subjectively interpret and negotiate the meaning of 21st-century learning within their everyday pedagogical practices. Existing studies largely position teachers as curriculum implementers or subjects of competency assessment, while the lived experiences behind their pedagogical decision-making remain underexplored. In reality, teachers continuously negotiate between curriculum expectations, children's developmental needs, institutional limitations, and parental demands regarding early academic achievement. This condition suggests that the implementation of 21st-century learning is not merely a technical or instructional issue, but also a contextual and interpretive process shaped by teachers' experiences and educational environments.

In addition, ECE teachers are often confronted with external pressures related to children's literacy and numeracy readiness for primary school. Parents frequently associate educational quality with children's ability to read, write, and count at an early age, creating tensions between developmental approaches and academic expectations (Rahmanisari, 2024; Putri & Utoyo, 2025). Such conditions potentially influence teachers' pedagogical choices and may shift learning orientations toward academic preparation rather than holistic child development. Consequently, teachers are required to balance curriculum ideals with contextual realities in their daily classroom practices.

Preliminary findings in this study indicate that some teachers do not yet possess a clear conceptual understanding of 21st-century learning, even though many of their classroom practices already reflect its principles. Teachers often associate 21st-century learning primarily with technology use, while implicitly implementing collaboration, communication, creativity, and child-centered learning through play activities and social interaction. This phenomenon indicates the existence of a gap between conceptual understanding and pedagogical practice, where teachers demonstrate practical competence despite limited conceptual articulation (Darling-Hammond, 2020; OECD, 2021). The findings also suggest that teachers' pedagogical knowledge tends to develop through lived teaching experiences rather than through formal theoretical mastery.

Unlike previous studies that mainly evaluate implementation outcomes or teacher competencies, this study employs a descriptive phenomenological approach to explore teachers' lived experiences and meaning-making processes regarding 21st-century learning. The novelty of this study lies in revealing the concept-practice gap in ECE contexts, where teachers enact 21st-century pedagogical practices implicitly despite limited conceptual awareness. Furthermore, this study highlights the ecosystem tensions influencing pedagogical decision-making, particularly the interaction between curriculum expectations, parental academic demands, and contextual classroom realities. By focusing on teachers' subjective experiences, this study contributes to a deeper understanding of how 21st-century learning is interpreted, negotiated, and practiced in early childhood education settings.

Based on these issues, this study aims to explore ECE teachers' perceptions of 21st-century learning, how they implement it in classroom practice, and the contextual factors influencing their pedagogical decision-making. Accordingly, this study addresses the following research questions:

1. How do early childhood teachers conceptualize 21st-century learning?
2. How is 21st-century learning implemented in classroom practice?
3. What gaps exist between teachers' conceptual understanding and their instructional practices?

## 2. METHODS

This study employed a qualitative approach with a descriptive phenomenological design to explore the lived experiences of early childhood education (ECE) teachers in interpreting and implementing 21st-century learning in their everyday pedagogical practices. A phenomenological approach was employed to capture how teachers experience, interpret, and construct meaning from their daily teaching practices related to 21st-century learning. The study was conducted in Dago Subdistrict, Coblong District, Bandung City, an urban area characterized by diverse social and educational dynamics. The area was selected because it reflects the contextual challenges of implementing 21st-century learning in ECE settings, including relatively high parental expectations regarding children's academic readiness from an early age.

These conditions place ECE institutions in complex educational contexts, where classroom practices are influenced not only by curriculum policies but also by broader social expectations. Participants consisted of eight ECE teachers from several private ECE institutions in the Dago area. They were selected using purposive sampling by considering variations in age, educational background, and teaching experience, allowing the study to capture diverse perspectives and experiences related to 21st-century learning. The number of participants was considered adequate for phenomenological research, as the purpose of the study was not generalization, but the exploration of the depth and meaning of participants' lived experiences (Creswell & Creswell, 2018)

Data were collected through in-depth interviews lasting approximately 60-90 minutes. Interviews were conducted both individually and in small groups consisting of two participants, depending on participants' availability and comfort during the research process. This flexible interview format enabled participants to share their experiences more naturally and allowed interaction among participants to enrich the discussion. All interviews were audio-recorded with participants' consent and transcribed verbatim for analysis. Prior to data collection, participants were informed about the objectives and procedures of the study to ensure informed consent and voluntary participation.

Data analysis followed descriptive phenomenological procedures adapted from Creswell & Creswell (2018) and Sousa (2014). The analysis began with the process of bracketing (*epoché*), in which the researcher consciously attempted to set aside prior assumptions and personal perspectives to minimize interpretive bias. The interview transcripts were then read repeatedly to gain a holistic understanding of participants' experiences. Significant statements related to teachers' perceptions and practices of 21st-century learning were identified through horizontalization and subsequently grouped into meaning units. These meaning units were then organized into themes representing shared patterns across participants' experiences.

The analysis continued with the development of textural descriptions, describing what participants experienced, and structural descriptions, explaining how the experiences occurred within particular social and pedagogical contexts. Finally, the researcher synthesized the essence of the phenomenon to capture the core meaning of teachers' experiences in interpreting and implementing 21st-century learning in ECE settings. In this study, thematic analysis functioned as an intermediate analytical process, while the overall interpretation remained grounded in phenomenological principles. To ensure the trustworthiness of the study, several validation strategies were employed. Member checking was conducted by allowing participants to review and confirm the accuracy of interview transcripts and interpretations. An audit trail was also maintained by systematically documenting the research process, including data collection, coding, theme development, and interpretation. In addition, the researcher engaged in continuous reflexivity throughout the study to maintain consistency between interpretations and empirical data.

The demographic and professional characteristics of the participants involved in this study are presented in Table 1. The table summarizes participants' age, teaching experience, and educational

background, which provide important contextual information for understanding teachers' perspectives and lived experiences related to 21st-century learning in ECE settings.

**Table 1. Characteristics of Research Participants**

| Participant | Age (Years) | Teaching Experience   | Educational Background                                |
|-------------|-------------|---|---|
| P1          | 44          | ECE teacher since 2014  | Diploma in Primary School Teacher Education (D3 PGSD) |
| P2          | 41          | ECE teacher since 2013  | Bachelor's in Management (S1)                         |
| P3          | 24          | ECE teacher since 2024  | Diploma in Management (D3)                            |
| P4          | 43          | Elementary school teacher (2004–2010), ECE teacher since 2016 | Bachelor's in Early Childhood Education (S1 PAUD)     |
| P5          | 34          | ECE teacher since 2012  | Bachelor's in Early Childhood Education (S1 PAUD)     |
| P6          | 25          | ECE teacher since 2022  | Bachelor's in Early Childhood Education (S1 PAUD)     |
| P7          | 40          | ECE teacher since 2008  | Bachelor's in Early Childhood Education (S1 PAUD)     |
| P8          | 29          | ECE teacher since 2018  | Bachelor's in Early Childhood Education (S1 PAUD)     |

The diversity of participants' educational backgrounds and teaching experiences provided rich perspectives for exploring how teachers interpret and implement 21st-century learning within ECE contexts.

### 3. RESULT AND DISCUSSION

The findings of this study were obtained through a thematic analysis process aimed at identifying patterns in teachers' meaning-making, the dynamics of pedagogical practices, and contextual factors influencing the implementation of 21st-century learning in early childhood education (ECE). The analysis resulted in six main themes that represent how teachers understand, implement, and negotiate 21st-century learning in their daily practices. To provide an initial overview of the overall research findings, Table 2 presents a thematic analysis matrix.

These six themes are further analyzed in depth to reveal the meaning and interconnections among the findings. The analysis begins by examining the role of teachers' backgrounds and experiences as the foundation for shaping their understanding of 21st-century learning.

#### *Teachers' Backgrounds and Professional Experiences as the Foundation for Understanding 21st-Century Learning*

The diversity of educational backgrounds and teaching experiences among ECE teachers shapes the way they make sense of 21st-century learning. Participants in this study came from non-ECE backgrounds to ECE graduates, with teaching experience ranging from novice to senior teachers. The findings indicate that teachers' understanding is not primarily formed through mastery of formal concepts but develops through reflective daily pedagogical experiences (Fonsén et al., 2023; Kangas & Harju-Luukkainen, 2021). One participant stated:

*"I learned many things from directly facing different children's characters in the classroom." (P3)*

This statement illustrates how teachers construct pedagogical understanding through direct interaction with children and continuous classroom experiences. Intensive engagement with young children encourages teachers to view learning as a process that emphasizes character formation, independence, and socio-emotional readiness rather than merely academic achievement. Within this perspective, 21st-century learning is interpreted pragmatically as an effort to prepare children for future educational transitions. This finding suggests that teachers' pedagogical orientations are more

strongly rooted in children's developmental needs and everyday educational realities than in abstract conceptual frameworks.

Interestingly, when asked directly, most teachers were unfamiliar with the term "21st-century learning" in a conceptual or terminological sense and initially associated it primarily with technology use. However, further exploration of their classroom practices revealed that many teachers had already implicitly implemented the core principles of 21st-century learning. After receiving a brief explanation regarding 21st-century skills, teachers were able to reflect on various practices they routinely carried out, including activity-based learning, social interaction, collaborative activities, and active child participation (Fleer, 2021; Edwards & Edwards, 2017). These results suggest a practical pattern of meaning-making, where teachers' understanding is built from concrete classroom experiences rather than from mastery of academic terminology.

**Table 2. Thematic Analysis Matrix of ECE Teachers' Perceptions of Twenty-First Century Learning**

| Analytical Theme                                    | Key Pattern   | Representative Quote  | Analytical Insight  |
|---|---|---|---|
| Meaning-Making of 21 <sup>st</sup> Century Learning | Learning viewed as non-traditional and activity-based | "Learning should not be too traditional... collaboration, projects." (P1, P3) | Understanding is practice-oriented rather than conceptual |
|   | Learning as preparation for primary school            | "The emphasis is on preparing children to enter primary school." (P2, P4)     | Academic readiness shapes meaning-making                  |
| Merdeka Curriculum                                  | Perceived as flexible                                 | "This curriculum gives us the freedom to improvise more." (P1, P5)            | Viewed as pedagogical space                               |
|   | Administrative challenges                             | "What was confusing at first was the administration." (P2, P6)                | Limits reflective practice                                |
| Deep Learning                                       | Seen as existing practice                             | "We have been doing this for a long time." (P1, P4)                           | Understood intuitively                                    |
|   | based on experience                                   | "Learning from direct experience..." (P6)                                     | Grounded in concrete activities                           |
| Classroom Practice                                  | Contextual & activity-based learning                  | "We did drama activities..." (P3)   | 4C skills emerge implicitly                               |
|   | Character -focused                                    | "Character is the priority." (P1, P2)   | Character as core orientation                             |
| External Dynamics                                   | Parental pressure                                     | "Parents ask if children can read..." (P4)                                    | Drives pedagogical compromise                             |
| Teacher Capacity                                    | Self-directed learning                                | "We learn from our phones." (P5, P6)  | Informal professional learning                            |
|   | Need for support                                      | "I still need to keep learning." (P2, P7)                                     | Gap between practice & theory                             |

This finding demonstrates a shift from terminological unawareness toward practical pedagogical competence embedded within everyday teaching practices. In this regard, experience functions as a primary medium for shaping teachers' professional knowledge, supporting previous studies emphasizing the role of reflective practice and experiential learning in developing pedagogical competence (Darling-Hammond, 2020)

Conceptually, many practices described by participants align with the framework of 21st-century skills, including communication, collaboration, creativity, and critical thinking (Aulia, 2022) In ECE contexts, these competencies are generally fostered through play-based learning, social interaction, and experiential activities rather than formal instruction, as also highlighted by Nikkola et al. (2024).

Therefore, the findings in this section show that teachers' classroom practices develop more as a response to experience and class context than as a result of pedagogical planning based on explicit conceptual frameworks. These findings are consistent with previous studies showing that ECE teachers' pedagogical understanding often develops through practice and reflection, rather than through formal conceptual mastery (Fonsén et al., 2023; Kangas & Harju-Luukkainen, 2021). This situation not only shapes how teachers understand learning but also structurally conditions the gap

between conceptual knowledge and enacted practice, highlighting the need for a more integrated approach to teacher development in 21st-century learning contexts.

### *The Gap between Conceptual Understanding and Teachers' Pedagogical Practices*

One of the main findings of this study is the existence of a gap between teachers' conceptual understanding of 21st-century learning and the pedagogical practices they implement in the classroom. Although the term is often perceived as an abstract concept closely associated with the use of technology, the learning practices carried out by teachers have in fact reflected the core principles of 21st-century learning (Aulia, 2022 ; Fleer, 2021). One participant initially associated 21st-century learning primarily with technology-based instruction.

*"At first, I thought 21st-century learning was mostly about technology." (P2)*

However, further interviews revealed that teachers had already implemented child-centered and participatory learning approaches in everyday classroom activities. Another participant explained:

*"We always give children opportunities to express their opinions and present their work." (P4)*

These responses indicate that although teachers may lack familiarity with formal terminology, many of their classroom practices already reflect the principles of communication, collaboration, participation, and active engagement associated with 21st-century learning. This finding not only highlights a difference between concept and practice but also reveals the mechanisms through which the gap is formed. Teachers do not build understanding through formal conceptual frameworks but through repeated practical experiences in the classroom context, which aligns with the notion of tacit knowledge and experiential learning as key sources of professional development (Eraut, 2000; Arnold & Schön, 2021). In this situation, pedagogical practices develop situationally in response to children's needs, class dynamics, and environmental demands, rather than as outcomes of explicitly concept-based planning.

This context helps explain why teachers are able to implement collaborative, project-based learning and engage children in active participation, even without strong terminological understanding. Practices such as providing space for children to express their opinions, cooperating in group activities, and engaging in meaningful play indicate that pedagogical competence develops implicitly through experience rather than through conceptual articulation, which is consistent with previous findings on early childhood education practices emphasizing active engagement and child-centered learning (Fleer, 2021 ; Edwards & Edwards, 2017).

This pattern reflects what may be described as "practice precedes concept," where pedagogical practices develop before teachers fully articulate them conceptually. In this context, teaching experience becomes the primary source of professional knowledge formation, while conceptual understanding emerges later through reflection on practice. This dynamic aligns with the notion of tacit knowledge, namely knowledge developed through experience that is often difficult to express explicitly (Eraut, 2000). Arnold & Schön (2021) argue that professional competence develops through reflective engagement in authentic practice rather than solely through formal theoretical mastery. Within ECE contexts, teachers continuously construct pedagogical competence through direct involvement in dynamic classroom situations.

These results are also consistent with research by Fonsén et al. (2023) and Kangas & Harju-Luukkainen (2021) which show that ECE teachers tend to internalize pedagogical values through experience and reflective practice. In the Indonesian context, limited access to reflective and systematic conceptual training encourages teachers to rely more on intuition and personal experience in their teaching practice (Whindayati et al., 2025). From a phenomenological perspective, this gap should not be viewed merely as a deficiency but as a form of meaning-making rooted in lived experience. Teachers interpret 21st-century learning through everyday pedagogical practices, such as fostering good habits, character formation, and children's readiness to transition to the next level of education (Whindayati et al., 2025 ; Restya D. N. et al., 2024). As reflected by one participant:

*“What we mainly teach is good habits and character so children are ready for elementary school.”*  
(P5)

This illustrates how teachers interpret 21st-century learning through practical concerns related to children’s readiness, behavior, and everyday development rather than through abstract pedagogical discourse. However, this gap also carries important implications. When pedagogical practice is not supported by adequate conceptual understanding, teachers’ ability to critically reflect on, develop, and communicate their teaching practices becomes limited (Fonsén et al., 2023). As a result, learning practices risk remaining at the level of intuitive routines and may struggle to evolve into systematic and sustainable pedagogical designs (Kangas & Harju-Luukkainen, 2021).

Thus, the gap between concept and practice is not only a descriptive phenomenon but also reflects structural conditions within early childhood education practice. Strengthening conceptual understanding, therefore, is not intended to replace practical experience but to integrate it into a more reflective, explicit, and sustainable pedagogical framework (Darling-Hammond, 2020 ; Aulia, 2022). In this regard, it becomes important to examine how these practices are concretely manifested in everyday learning activities, particularly in relation to the development of 21st-century skills.

#### *Implementation of 21st-Century Skills (4C) in Early Childhood Learning*

The findings of this study indicate that 21st-century skills (4C) do not emerge as a result of learning plans explicitly based on conceptual frameworks but rather develop implicitly in daily learning practices. Teachers do not consciously design learning with the label “4C,” yet the activities they facilitate reflect elements of critical thinking, creativity, communication, and collaboration (Fleer, 2021; Mahendra R. A et al., 2024). This indicates that the implementation of 21st-century skills in ECE is embedded and contextual, meaning it is integrated into children’s learning experiences rather than taught as separate competencies. This aligns with (Niu et al., 2021), who found that 21st-century skills in basic education develop through integration into learning activities rather than as separate subjects. Therefore, the 4C do not appear as explicit instructional objectives but as a consequence of activity-based, socially interactive, and play-based learning designs (Putri M. A. et al., 2021).

More specifically, this pattern of implementation shows that critical thinking, creativity, communication, and collaboration develop through meaningful learning situations rather than through direct instruction. For example, when children engage in simple projects, discuss with peers, or participate in role play, they simultaneously use thinking, communication, and collaboration skills (Fleer, 2021; Mahendra R. A et al., 2024). In this context, the boundaries between one skill and another are not distinct but are integrated within a holistic learning experience. One participant described how collaborative and communicative skills naturally emerged during classroom activities:

*“We divide children into groups when making donuts so they learn to cooperate and wait for their turn.”* (P6)

Another teacher explained:

*“Children are encouraged to tell stories and explain their work in front of the class.”* (P4)

These examples demonstrate that communication, collaboration, creativity, and early problem-solving skills are developed through meaningful play and social interaction rather than through direct instruction. The implementation of the 4C therefore occurs organically within children’s everyday learning experiences.

These results highlight that in ECE practice, the 4C are better understood as a developmental process rather than as discrete cognitive outcomes that can be separately measured. This is in line with the OECD (2021) perspective, which emphasizes that critical thinking skills in early childhood develop through social interaction, exploration, and reflection on experiences rather than abstract reasoning. Additionally, (Nikkola et al., 2024) highlight that social participation and active child engagement are fundamental for the development of 21st-century skills from an early age.

However, these findings also carry important implications. The absence of an explicit conceptual framework does not necessarily indicate weak pedagogical quality; rather, it reflects a form of embedded competence that remains largely unarticulated within teachers' professional discourse. Consequently, teachers may experience difficulties in systematically reflecting on, evaluating, and further developing their pedagogical practices. Rather than simply indicating a gap, this finding reveals a structural disconnection between enacted pedagogical practices and their conceptual articulation, where rich and meaningful learning activities are not always accompanied by explicit theoretical awareness. This pattern resonates with previous studies highlighting that pedagogical knowledge in early childhood education is often embedded in practice and remains under-conceptualized within professional discourse (Fonsén et al., 2023; Kangas & Harju-Luukkainen, 2021).

From a phenomenological perspective, the implementation of the 4C in ECE learning can be understood as lived learning experiences, meaning learning experiences constructed through children's direct engagement in social interactions and the learning environment (Restya D. N. et al., 2024; Whindayati et al., 2025). 21st-century skills do not exist as concepts to be taught but as experiences that are lived and meaningfully interpreted by children in their daily activities.

Taken together, these findings highlight that the primary strength of ECE learning lies in its ability to provide authentic and meaningful learning experiences. However, without the support of a strong conceptual framework, this potential may not fully develop into reflective, structured, and sustainable pedagogical practice (Darling-Hammond, 2020; Aulia, 2022). These findings suggest that the challenge in early childhood education is not the absence of 21st-century skills in practice, but the limited capacity to conceptualize, articulate, and systematically develop these practices into coherent pedagogical frameworks. The diversity of educational backgrounds and teaching experiences among ECE teachers shapes the way they make sense of 21st-century learning. Participants in this study came from non-ECE backgrounds to ECE graduates, with teaching experience ranging from novice to senior teachers.

#### *Merdeka Curriculum and the Deep Learning Approach from Early Childhood Teachers' Perspectives*

The findings of this study suggest that Kurikulum Merdeka is not merely understood as a policy change but as a pedagogical space that enables the reconfiguration of classroom practices. The flexibility provided by this curriculum is interpreted by teachers as an opportunity to adjust learning according to children's needs, classroom context, and diverse developmental dynamics. Thus, the Independent Curriculum functions not only as an administrative framework but as an enabling framework that opens space for more contextual and responsive learning practices (Sumantri A. & Budi, 2019; Paramita et al., 2025). One participant explained that the Independent Curriculum provided greater flexibility in classroom practice.

*"The Merdeka Curriculum gives us more freedom to improvise in teaching according to children's needs." (P1)*

This statement indicates that teachers perceive the curriculum not merely as a formal policy but as a flexible pedagogical space that allows them to adapt learning activities to children's developmental characteristics and classroom situations. This interpretation shows that curriculum implementation at the unit level does not occur linearly from policy to practice, but rather through processes of adaptation and negotiation influenced by teachers' experiences, pedagogical beliefs, and learning environment conditions. In this regard, teachers act as key actors who translate policy into meaningful practice. These findings align with Hargreaves & Fullan (2020), who asserts that curriculum changes will only have a significant impact when mediated by teachers' interpretative capacities within real practice contexts.

Furthermore, teachers' understanding of deep learning reveals an interesting dimension. Rather than being seen as a new pedagogical approach, deep learning is reconstructed by teachers as something long present in learning practices, particularly through habituation, emotional engagement, and repeated, meaningful learning experiences. This indicates a process of concept

reinterpretation, where new terms are not adopted conceptually but are absorbed through pre-existing experiential frameworks (Dwijantie, 2025; Dwiyanti H & Ismail, 2025). This tendency was reflected in teachers' responses during the interviews. As one participant stated:

*"Actually, we have been doing deep learning for a long time through daily habits and repeated activities." (P5)*

This response illustrates how teachers reconstruct the concept of deep learning through experiential understanding rather than through formal conceptual definitions. Deep learning is therefore perceived less as a new instructional approach and more as a continuation of meaningful learning practices already embedded within ECE classrooms.

This phenomenon suggests that, within ECE contexts, deep learning is not viewed as a separate instructional strategy but as a quality embedded within meaningful learning experiences. Learning is considered "deep" when children actively participate, directly experience activities, and construct meaning through interaction and engagement. This perspective aligns with Hedges (2022) who emphasizes that meaningful learning in early childhood emerges when learning experiences are connected to children's everyday life contexts.

However, this reinterpretation also reveals a critical limitation. When deep learning is understood as something that is already "commonly practiced," its conceptual depth risks being diluted, reducing it to experiential familiarity rather than a reflective and intentionally designed pedagogical process. In the educational literature, deep learning extends beyond meaningful engagement to include the capacity to connect knowledge, engage in reflection, and transfer learning across contexts (Fullan & Quinn, 2020). This finding reveals a pedagogical tension in which curriculum flexibility enables rich experiential learning while simultaneously demanding a level of conceptual clarity that is not always sufficiently developed in practice (Paramita et al., 2025).

From a phenomenological perspective, teachers' interpretations of the Independent Curriculum and deep learning are not simply acts of implementation, but processes of meaning construction grounded in lived pedagogical experience. Concepts are not adopted as fixed entities, but are continuously interpreted and reshaped through teachers' interactions with children and classroom realities. Therefore, curriculum implementation cannot be separated from how teachers understand and make meaning of these experiences (Dwiyanti H & Ismail, 2025; Dwijantie, 2025).

Overall, these findings suggest that the challenge in implementing deep learning within early childhood education does not lie in the absence of meaningful practice, but in the limited capacity to conceptualize and intentionally design such practices as part of a coherent pedagogical framework. Strengthening the implementation of the Independent Curriculum, therefore, requires not only structural flexibility but also sustained professional support that enables teachers to translate experiential knowledge into reflective and theoretically grounded practice (Hargreaves & Fullan, 2020; Paramita et al., 2025).

#### *Parental Pressure and the Literacy-Numeracy Dilemma in the Implementation of 21st-Century Learning*

The findings of this study reveal a persistent pedagogical tension experienced by ECE teachers in implementing 21st-century learning, particularly between child-development orientations and parents' demands for early academic achievement. This tension is not merely a difference in perspective but constitutes a negotiation space that directly influences the direction of pedagogical practices in the classroom (Wulandari & Fachrani, 2023; Rahmanisari, 2024).

On one hand, 21st-century learning in ECE emphasizes meaningful, play-based learning experiences, as well as the strengthening of socio-emotional and character aspects. On the other hand, parents' expectations regarding literacy and numeracy achievement as indicators of readiness for primary school create pressure that shifts the orientation of learning. In this context, teachers are not in a pedagogically autonomous but but continuously positioned between developmental learning principles and external academic expectations (Dewi & Hasanah, 2021; Putri & Utoyo, 2025).

Several teachers explicitly described the pressure they experienced from parents regarding early literacy and numeracy achievement. One participant stated:

*"Parents still expect children to graduate from kindergarten already able to read and write." (P1)*

Another teacher explained:

*"Teachers in elementary school still ask whether children can already read or not." (P4)*

These responses demonstrate that academic expectations surrounding literacy and numeracy are socially reinforced not only by parents but also by broader educational transition demands. Consequently, teachers often experience pressure to prioritize academic readiness alongside developmental learning goals. This tension illustrates that learning practices are not entirely determined by teachers' competencies or pedagogical preferences but also by external social forces that shape expectations for early childhood education. In line with recent early childhood education research, early academic orientation remains a strong social construct across various contexts, where children's success is often reduced to calistung achievement (Zulauf-McCurdy et al., 2024; Putri & Utoyo, 2025). This condition results in what is referred to as the "schoolification of early childhood education", i.e., the tendency to bring primary school practices into the ECE context.

In responding to this pressure, teachers neither completely reject nor fully accept it but engage in pedagogical negotiation strategies. The integration of calistung into play activities, projects, and contextualized tasks shows that teachers actively construct a middle ground between children's developmental needs and parents' expectations. Strategies such as using drill-based reading activities adapted to children's engagement and enjoyment further illustrate how teachers negotiate academic demands with pedagogical principles (Dewi & Hasanah, 2021; Putri & Utoyo, 2025; Nafisa et al., 2024). These strategies indicate that teachers are not passive recipients of external demands, but active agents who reinterpret and transform such pressures into contextually meaningful pedagogical practices. Teachers also described the emotional and pedagogical challenges involved in balancing these competing expectations. As one participant explained below.

*"I want learning to remain enjoyable, but at the same time parents expect children to already be able to read." (P1)*

This statement reflects the ongoing pedagogical negotiation experienced by teachers as they attempt to maintain developmentally appropriate learning while simultaneously responding to external academic expectations. However, this negotiated practice also reveals a critical vulnerability. When external academic pressure becomes dominant, the meaning of 21st-century learning risks being narrowed, shifting from a holistic developmental orientation toward instrumental preparation for formal schooling. This aligns with findings by Rahmanisari (2024) and Wulandari & Fachrani (2023), which indicate that parental expectation dominance can shift the focus of learning from process to academic outcome.

From a phenomenological perspective, this tension represents teachers' lived experience as a continuous negotiation between ideal pedagogical principles and contextual realities. Teachers function not only as curriculum implementers but as mediators who actively interpret, adapt, and reconstruct the meaning of learning within complex social expectations. Thus, the calistung dilemma cannot be understood as an individual teacher problem but as a systemic phenomenon reflecting the misalignment between schools, parents, and educational expectations (Putri & Utoyo, 2025; Rahmanisari, 2024). These findings reinforce the study's main argument that the implementation of 21st-century learning in ECE cannot be separated from the broader educational ecosystem context. The tension between social demands and pedagogical principles demonstrates that successful implementation depends not only on teachers but also on the alignment of educational values among schools, parents, and the overall education system (Wulandari & Fachrani, 2023; Dewi & Hasanah, 2021).

### ***Implications for Strengthening the 21st-Century Learning Ecosystem in Early Childhood Education***

The findings of this study underscore that the implementation of 21st-century learning in early childhood education (ECE) cannot be reduced to individual teachers' actions alone. Rather, it

emerges from systemic interactions within an interconnected educational ecosystem, where the quality of learning is shaped by the dynamic relationships among teachers, parents, and educational policies (Tal, 2021; Zulauf-McCurdy et al., 2024). Learning outcomes are thus a product of these interactions, not solely classroom practices, reflecting the teachers' lived experiences of negotiating multiple expectations in real-world contexts. This suggests that the effectiveness of 21st-century learning is relational in nature, shaped not only by teachers' classroom practices but also by the alignment of expectations among actors within the educational ecosystem. One participant emphasized the importance of collaboration among teachers, parents, and children within the educational process, As reflected in the following statement:

*“Education is a triangle between teachers, parents, and children. If one side is disconnected, it becomes difficult to achieve success.” (P1)*

This statement illustrates how teachers perceive learning as a relational and interconnected process that depends on the alignment of multiple actors within the educational ecosystem. The effectiveness of 21st-century learning is therefore understood as a shared responsibility shaped by collaboration and aligned educational expectations among schools, families, and broader educational structures.

In this context, teachers' roles extend beyond curriculum implementers. They operate within spaces constrained by external pressures, including parents' academic expectations and policy requirements, which influence the depth and direction of pedagogical practices (Rahmanisari, 2024; Mardiani et al., 2024). Limitations in conceptual understanding, coupled with social and institutional pressures, highlight that 21st-century learning in ECE unfolds under non-ideal conditions. This underscores the need for a systemic approach that considers both classroom-level practice and broader structural factors (Fonsén et al., 2023).

Applying Educational Ecosystem Theory, learning emerges from the interconnections among system components, making coherence across these elements a critical condition for sustaining meaningful pedagogical practice (Tal, 2021; Zulauf-McCurdy et al., 2024). Teachers' professional capacity is most effective when supported by environments that foster shared understanding of early childhood learning objectives. Without such support, pedagogical practice remains fragmented, reactive, and largely experience-based rather than reflective and intentional (Herman et al., 2025).

The first implication concerns strengthening reflective professional support for teachers. Teacher development programs must integrate practical experience with conceptual reflection to allow teachers to articulate, evaluate, and intentionally develop their pedagogical practices (Fonsén et al., 2023; Kangas & Harju-Luukkainen, 2021). This integration helps connect lived classroom experiences to theoretical frameworks, fostering sustainable, high-quality learning practices. Without such integration, experiential knowledge risks remaining tacit and difficult to translate into sustainable pedagogical improvement.

The second implication relates to the reconstruction of the relationship between schools and parents. The findings show that misalignment in understanding between teachers and parents is a key factor hindering the implementation of 21st-century learning (Zulauf-McCurdy et al., 2024; Rahmanisari, 2024). Establishing ongoing dialogue, grounded in trust and mutual understanding, enables parents to participate in shaping learning that is developmentally appropriate while preserving holistic child development. Teachers' lived experiences indicate that relational work is as critical as curriculum design in supporting meaningful learning.

The third implication highlights the necessity of aligning educational policy with ECE principles. Policies regarding the transition from ECE to primary school must prevent premature academic pressure that conflicts with play-based and holistic learning approaches (Mardiani et al., 2024; Dewi & Hasanah, 2021). Differences in perceptions of school readiness generate structural tensions that influence classroom practices, making systemic coherence essential to support teachers' pedagogical decision-making.

Taken together, this study shows that 21st-century learning in early childhood education is shaped by the alignment of interconnected elements within the educational ecosystem, rather than by isolated teaching practices (Tal, 2021). Teachers' experiences reveal that pedagogical decisions

are continuously negotiated across classroom realities, parental expectations, and policy contexts. The effectiveness of such learning, therefore, depends on the coherence between pedagogical practice, family expectations, and educational policy. Without this alignment, learning practices risk remaining adaptive but insufficiently reflective and sustainable. Strengthening the ecosystem through integrated professional support and shared understanding between schools and families is thus essential for developing pedagogical practices that are both meaningful and conceptually grounded (Fonsén et al., 2023). To synthesize the overall findings and their interpretive meanings, the results of this study are summarized in Table 3.

**Table 3. Synthesis of Findings and Analytical Meanings of Early Childhood Teachers' Perceptions of 21st-Century Learning**

| Thematic Focus   | Core Pattern of Findings   | Interpretive Meaning  |
|--|--|---|
| Teachers' background and experience                    | Pedagogical understanding is primarily shaped by teaching experience rather than formal training | Teachers' professional knowledge is constructed through lived pedagogical experience, not conceptual mastery        |
| Concept-practice relationship                          | Teachers demonstrate 21st-century practices but lack conceptual articulation                     | A concept-practice gap exists, where practice develops faster than theoretical understanding                        |
| Enactment of 21st-century skills (4C)                  | 4C skills emerge naturally through play-based and interactive activities                         | 21st-century skills are enacted implicitly and integratively, not as explicit instructional goals                   |
| Interpretation of Merdeka Curriculum and deep learning | Curriculum is experienced as flexible; deep learning understood as habituation and repetition    | Teachers construct meaning intuitively, translating policy into experiential practice                               |
| Parental pressure and academic expectations            | Strong demands for early literacy-numeracy influence classroom decisions                         | Teachers operate within a pedagogical tension, negotiating between developmental principles and social expectations |
| Ecosystem of 21st-century learning                     | Teaching practices are shaped by interactions among teachers, parents, and policy                | 21st-century learning is an ecosystem-driven process, not an individual teacher's responsibility                    |

#### 4. CONCLUSION

This study contributes to the growing discussion on 21st-century learning in early childhood education by demonstrating that pedagogical competence may emerge experientially before being conceptually articulated. Although teachers were often unfamiliar with the formal terminology of 21st-century learning, they had already implemented its core principles through meaningful, play-based, and socially interactive learning practices. The findings reveal a persistent gap between conceptual understanding and pedagogical practice, where teachers' professional knowledge develops primarily through lived classroom experiences rather than through explicit theoretical mastery. The study also shows that the implementation of 21st-century learning in ECE is shaped by continuous negotiation between pedagogical values and external social demands, particularly parental expectations regarding early literacy and numeracy achievement. In this context, teachers function not merely as curriculum implementers, but as active mediators who reinterpret educational policies and classroom realities within complex social contexts.

Collectively, this study highlights that 21st-century learning in ECE cannot be understood solely at the classroom level, but must be viewed as part of a broader educational ecosystem involving teachers, parents, schools, and policy structures. Therefore, strengthening teachers' conceptual understanding through reflective professional support, while simultaneously fostering alignment among educational stakeholders, is essential to developing pedagogical practices that are meaningful, reflective, and sustainable.

#### 5. ACKNOWLEDGMENTS

Appreciation is extended to the early childhood teachers who participated in this study for their time, openness, and meaningful contributions. Gratitude is also expressed to the school administrators for facilitating the research process.

#### 6. REFERENCES

- Arnold, R., & Schön, M. (2021). The reflexible person: toward an epistemological learning culture. *Journal of Awareness-Based Systems Change*, 1(2), 51-71. <https://doi.org/10.47061/jabsc.v1i2.971>

- Aulia, E. (2022). Effects of 21st century learning on the development of critical thinking, creativity, communication, and collaboration skills. *Journal of Nonformal Education*, 8(1), 46–53.  
<https://doi.org/10.15294/jne.v8i1.33334>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: qualitative, quantitative, and mixed methods approaches* (H. Salmon, C. Neve, & M. O’Heffernan, Eds.; Fifth edition). SAGE Publications.
- Darling-Hammond, L. (2020). Accountability in teacher education. *action in teacher education*, 42(1), 60–71.  
<https://doi.org/10.1080/01626620.2019.1704464>
- Dewi, N. F. K., & Hasanah, U. (2021). Persepsi orang tua dalam pembelajaran calistung anak kelompok b usia 5-6 tahun di tk negeri pembina akhlaqul karimah. *Ceria: Jurnal Program Studi Pendidikan Anak Usia Dini*, 9(2), 16.  
<https://doi.org/10.31000/ceria.v13i2.4012>
- Dwijantie, J. S. (2025). Pendekatan deep learning dalam pembelajaran paud: membangun pemahaman mendalam bagi anak usia dini. *Edukasiana: Jurnal Inovasi Pendidikan*, 4(3), 1238–1246.  
<https://doi.org/10.56916/ejip.v4i3.1666>
- Dwiyanti H, U. A., & Ismail, I. (2025). Pandangan filsafat ki hajar dewantara sebagai landasan pendidikan di era kurikulum merdeka dalam menghadapi abad 21. *JlIP - Jurnal Ilmiah Ilmu Pendidikan*, 8(1), 1105–1112.  
<https://doi.org/10.54371/jiip.v8i1.6424>
- Edwards, F. C. E., & Edwards, R. J. (2017). A story of culture and teaching: the complexity of teacher identity formation. *The Curriculum Journal*, 28(2), 190–211.  
<https://doi.org/10.1080/09585176.2016.1232200>
- Eraut, M. (2000). Knowledge creation and knowledge use in professional contexts. *Studies in Higher Education*, 10(2), 117–133.  
<https://doi.org/10.1080/03075078512331378549>
- Fitriani, D., Mahmud, S., & Abdul Aziz, U. (2023). Kajian fase tumbuh kembang anak usia dini dalam kurikulum merdeka belajar. *Bunayya: Jurnal Pendidikan Anak*, 9(1), 112.  
<https://doi.org/10.22373/bunayya.v9i1.17473>
- Fleer, M. (2021). Conceptual playworlds: the role of imagination in play and learning. *Early Years*, 41(4), 353–364.  
<https://doi.org/10.1080/09575146.2018.1549024>
- Fonsén, E., Szecsi, T., Kupila, P., Liinamaa, T., Halpern, C., & Repo, M. (2023). Teachers’ pedagogical leadership in early childhood education. *Educational Research*, 65(1), 1–23.  
<https://doi.org/https://doi.org/10.1080/00131881.2022.2147855>
- Fullan, M., & Quinn, J. (2020). Education policy; educational technology; education management; disruptive innovation; deep learning.  
<https://doi.org/https://doi.org/10.18235/0002959>
- Furi, L. D. R., Tri Harani, A., & Hidayati, N. (2025). Efektivitas project based learning dalam kurikulum merdeka untuk meningkatkan keterampilan anak usia dini pada abad-21. in *efektivitas project based learning dalam kurikulum merdeka*. <https://ejournal.upi.edu/index.php/RECEP>
- Hargreaves, A., & Fullan, M. (2020). Professional capital after the pandemic: revisiting and revising classic understandings of teachers’ work. *Journal of Professional Capital and Community*, 5(3/4), 327–336.  
<https://doi.org/10.1108/JPCC-06-2020-0039>
- Hedges. H. (2022). Children’s interests, inquiries and identities: Curriculum, pedagogy, learning and outcomes in the early years. *Routledge*.
- Herman, Sultan, & Suardi. (2025). Early childhood education teachers’ perceptions of pedagogical competence 4.0 in supporting early childhood development. *Discover Education*, 4(1).  
<https://doi.org/10.1007/s44217-025-00849-0>
- Kangas, J., & Harju-Luukkainen, H. (2021). What is the Future of ECE Teacher Profession? Teacher’s Agency in Finland Through the Lenses of Policy Documents.
- Komari, K., & Aslan, A. (2025). Jurnal ilmiah edukatif menggali potensi optimal anak usia dini: tinjauan literatur. 11(1), 68–78.

- Mahendra R. A., Putu, Ana Pali, R., Penerbit Lakeisha, & Andriyanto. (2024). Pembelajaran project citizen dalam mengembangkan keterampilan abad 21. 2(2). <https://doi.org/https://doi.org/10.60153/jocer.v2i2.101>
- Mardiani, D. P., Fitria, V., & Yulianingsih, W. (2024). Program transisi paud ke sd dalam perspektif orang tua dan guru. *Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini*, 8(1), 99–108. <https://doi.org/10.31004/obsesi.v8i1.4939>
- Nafisa, R. S., Fitriani, Y., & Nuroniah, P. (2024). Pengembangan kemampuan membaca anak usia 5-6 tahun menggunakan metode drill. *Aulad: Journal on Early Childhood*, 7(1), 210–218. <https://doi.org/10.31004/aulad.v7i1.635>
- Nikkola, T., Kangas, J., & Reunamo, J. (2024). Children's creative participation as a precursor of 21st century skills in finnish early childhood education and care context. *Learning and Individual Differences*, 111. <https://doi.org/10.1016/j.lindif.2024.102437>
- Niu, S. J., Niemi, H., Harju, V., & Pehkonen, L. (2021). Finnish student teachers' perceptions of their development of 21st-century competencies. *Journal of Education for Teaching*, 47(5), 638–653. <https://doi.org/10.1080/02607476.2021.1951602>
- OECD. (2021). *21st-Century Readers*. OECD. <https://doi.org/10.1787/a83d84cb-en>
- Paramita, A. A. J., Ariani, K. B., Mahadewi, N. P. D., & Werang, B. R. (2025). Tantangan implementasi pembelajaran mendalam sebagai pendekatan dalam kurikulum merdeka. *DIKSI: Jurnal Kajian Pendidikan Dan Sosial*, 6(4), 757–769. <https://doi.org/10.53299/diksi.v6i4.3030>
- Putri M. A., Wulandari C., & Febriastuti R. A. (2021). Implementasi pendekatan pembelajaran steam untuk 21st skill. (2). <https://doi.org/10.22515/abna.v2i2.4484>
- Putri, S. A., & Utoyo, S. (2025). Meluruskan miskonsepsi paud: paud bukan tempat menghafal dan belajar calistung. <https://doi.org/10.53515/cej.v6i1>
- Rahmanisari, D. (2024). Analisis perspektif orangtua tentang kesiapan literasi dalam program transisi pendidikan anak usia dini (paud) ke sekolah dasar (SD). <https://eprints.umm.ac.id/id/eprint/15401>
- Ranta, S., Kangas, J., Harju-Luukkainen, H., Ukkonen-Mikkola, T., Neitola, M., Kinos, J., Sajaniemi, N., & Kuusisto, A. (2023). Teachers' pedagogical competence in finnish early childhood education—A Narrative Literature Review. *Education Sciences*, 13(8). <https://doi.org/10.3390/educsci13080791>
- Restya D. N., Lestari M., & Nurlena R. (2024). Kompetensi guru paud pada abad 21. *JIBDAS*, 31–36. <https://doi.org/10.37081/jipdas.v4i1.1737>
- Retnaningsih, E., L., Khairiyah, U., & Sultan Abdurrahman Kepulauan Riau, S. (2022). Seling Jurnal Program Studi PGRA. Kurikulum merdeka pada pendidikan anak usia dini. <https://doi.org/https://doi.org/10.29062/seling.v8i2.1223>
- Sousa, D. (2014). Validation in Qualitative Research: General Aspects and Specificities of the Descriptive Phenomenological Method. *Qualitative Research in Psychology*, 11(2), 211–227. <https://doi.org/10.1080/14780887.2013.853855>
- Sumantri A., & Budi. (2019). *el-HikMAH PENGEMBANGAN KURIKULUM DI INDONESIA MENGHADAPI TUNTUTAN KOMPETENSI ABAD 21*. 13(2), 146–167. <http://journal.uinmataram.ac.id/index.php/elhikmah>
- Tal, C. (2021). An ecosystem perspective of practice and professional development in early childhood education and care (ECEC). In *European Early Childhood Education Research Journal* (Vol. 29, Number 6, pp. 809–812). Routledge. <https://doi.org/10.1080/1350293X.2021.1990573>
- Thornhill-Miller, B., Camarda, A., Mercier, M., Burkhardt, J. M., Morisseau, T., Bourgeois-Bougrine, S., Vinchon, F., El Hayek, S., Augereau-Landais, M., Mourey, F., Feybesse, C., Sundquist, D., & Lubart, T. (2023). Creativity, critical thinking, communication, and collaboration: assessment, certification, and promotion of 21st century skills for the future of work and education. In *Journal of Intelligence* (Vol. 11, Number 3). MDPI. <https://doi.org/10.3390/jintelligence11030054>

- Whindayati, A., Nur Fauziah, R., Fatimah, S., Handayani, D., & Mipa, P. (2025). Penguatan kompetensi abad 21 dalam pembelajaran di era digital: tantangan dan strategi pendidik indonesia. 10. <https://doi.org/10.23969/jp.v10i04.35543>
- Wulandari, H., & Fachrani, P. D. (2023). Analisis perspektif orang tua terhadap anak mahir calistung sebagai persiapan transisi paud. *Jurnal Pelita PAUD*, 7(2), 423–432. <https://doi.org/10.33222/pelitapaud.v7i2.2996>
- Zulauf-McCurdy, C. A., McManus, M. S., Golez, M., & Fetting, A. (2024). A systematic review of interventions to promote parent-teacher relationships in early care and education: exploring the social process between parents and teachers. *SAGE Open*, 14(4). <https://doi.org/10.1177/21582440241288114>