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Transforming the Mindset of Early Childhood Education Teachers in the Deep Learning Approach: Integrating Growth and Fixed Mindsets

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Abstract

The implementation of deep learning approaches in Early Childhood Education (ECE) demands comprehensive readiness, particularly regarding teachers' mindsets. However, limited research has examined how growth and Fixed mindsets influence pedagogical transformation in marginal areas such as Indonesia's 3T regions (frontier, outermost, underdeveloped). This study aims to explore how teachers' mindsets shape their responses to pedagogical innovation and how reflective thinking on mindset enhances meaningful and contextual learning. This study employed a descriptive qualitative approach through in-depth interviews and focus group discussions with 12 participants (teachers, headteachers, and school supervisors) across 13 districts in the 3T regions of East Nusa Tenggara. Data were analysed thematically using an inductive approach based on mindset framework. This study is limited by its geographical scope and small sample size. However, the findings hold significant implications for teacher training policies and the development of reflective learning communities in marginal contexts. Growth mindset emerged as a crucial psychosocial asset enabling contextual teaching practices, whereas Fixed mindset was identified both as a barrier and as an adaptive response to systemic limitations. This study highlights teacher mindset as a systemic issue in 3T contexts and offers new contributions to the implementation of deep learning Iapproaches in early childhood education.

Keywords: *Transformation, Growth mindset, Fixed mindset, ECE Teachers, Deep learning IApproach.*

INTRODUCTION

The implementation of deep learning in Early Childhood Education (PAUD) requires comprehensive readiness from the education ecosystem. This readiness

encompasses pedagogical competence, digital literacy, and teachers' capacity for professional reflection (Guttin et al., 2022; Ronkainen et al., 2019). Mindset is a key factor in this readiness. The literature distinguishes two main patterns: a growth mindset, which believes abilities can develop, and a fixed mindset, which considers intelligence to be fixed (Boylan et al., 2024; Memari et al., 2024). Teachers with a growth mindset are open to change and reflective about their practice (Fan et al., 2021; Fraser, 2018). On the other hand, a fixed mindset causes resistance to innovation and new learning (Campbell et al., 2020; Hallahan, 2020a; Liu et al., 2022).

In the deep learning approach, the principles of mindfulness, meaning, and joy require teachers to actively participate in creating reflective learning experiences. Teachers with a growth mindset tend to encourage children to face challenges, learn from mistakes, and think critically (Boylan et al., 2024). They use process-based teaching strategies and design constructive challenges (Chien & Sun, 2025; J. Lee et al., 2025) showed that children who learned with a growth mindset-oriented approach showed increased motivation and learning resilience.

However, the implementation of a growth mindset still faces obstacles. Many teachers misunderstand the concept, thus failing to integrate it effectively into their learning (Gazmuri, 2025; Platte et al., 2025; Rissanen et al., 2021). One-off interventions do not create lasting change. Therefore, teachers need ongoing training and reflective spaces through learning communities (Boylan et al., 2024; Fraser, 2018).

Teachers' mindsets also influence their responses to educational technology. A fixed mindset hinders the adoption of innovations like AI and personalized learning, while a growth mindset increases teachers' readiness for change (Wang et al., 2022; Zappe et al., 2017). Mastering the deep learning approach requires persistence, flexibility, and openness to challenges – all hallmarks of a growth mindset (Jones & Straub, 2017). The risk of a false growth mindset needs to be avoided through reflection on teaching practices that may still imply a fixed mindset (Memari et al., 2024).

Growth mindset has a direct impact on a child's character. Children who grow up in a reflective learning culture have intrinsic motivation, learning resilience, and the ability to manage failure (Morales-Navarro et al., 2024; Wolcott et al., 2021). Teachers act as facilitators who create a collaborative and safe learning environment, encouraging children to take risks and learn from mistakes (Cécillon et al., 2024; Fraser, 2018; Garwood & Ampuja, 2019).

However, deep learning practices still face systemic challenges. The complexity of learning design, limited instructional support, and inadequate infrastructure are significant obstacles (Ji et al., 2025; Yu et al., 2017). Teachers and children are often trapped in a surface approach due to pedagogical and technological limitations (Brown & Lee, 2012; Dalehefte & Canrinus, 2023). Therefore, strengthening the growth mindset must be part of professional training that encourages reflection and innovation (Hecht et al., 2023; Korsager et al., 2023).

This research is significant because it examines the role of mindset in the implementation of deep learning in early childhood education (PAUD) in the 3T (third-trend) region. Amid limited resources, a growth mindset is a source of teacher resilience and innovation. This study aims to uncover how teacher mindsets influence learning strategies and how reflection on mindsets can strengthen contextual and child-centered practices.

METHODS

This study uses a descriptive qualitative approach to deeply explore the mindsets of early childhood education (PAUD) teachers, both growth mindsets and fixed mindsets, in the context of implementing a deep learning approach. The primary focus is understanding how these mindsets shape teachers' responses to pedagogical changes, structural challenges, and learning innovations. This approach allows researchers to explore participants' subjective meanings and reflective processes, particularly in efforts to transform learning into meaningful and child-centered learning.

This research was conducted in various Early Childhood Education (PAUD) units in 13 districts in East Nusa Tenggara (NTT) Province, representing the 3T (frontier, outermost, and disadvantaged) regions: Ngada, Rote Ndao, South Central Timor, North Central Timor, East Manggarai, Ende, Nagekeo, East Sumba, West Sumba, Southwest Sumba, Central Sumba, Alor, and Sikka. These regions were selected because they reflect the complexity of geographic conditions, limited educational infrastructure, and the dynamics of curriculum reform implementation, which significantly influence teachers' mindsets and preparedness for learning transformation. The research was conducted over a one-month period, from July 11 to August 11, 2025.

The informants consisted of 12 individuals: 6 PAUD teachers, 3 principals, and 3 school supervisors. The sampling technique was purposive, with the following criteria: (1) having at least two years of experience in PAUD teaching and assessment practices; (2) having participated in training or socialization of the Independent Curriculum; and (3) being willing to reflect on their mindsets and learning strategies in the context of the shift towards in-depth learning.

Data were collected through in-depth interviews and focus group discussions (FGDs). The interviews were semi-structured, lasting 45-60 minutes, conducted online and offline, and were systematically recorded and transcribed. Focus Group Discussions (FGDs) were used to strengthen data triangulation, involving 5-8 participants across roles (teachers, principals, supervisors) to thematically discuss their perceptions, challenges, and mindset transformations regarding the implementation of deep learning.

Data analysis was conducted inductively thematically, beginning with rereading all transcripts to identify meaningful units. An open coding process was used to identify relevant statements, which were then grouped into categories such as: (1) teachers' perceptions of change, (2) expressions of growth and fixed mindsets, (3) responses to challenges, and (4) reflective practices in deep learning. This analysis was conducted with reference to mindset theory (Dweck, 2006) and literature related to the transformation of learning and early childhood education. The validity of the results was maintained through triangulation of sources and methods, namely by comparing data from interviews and FGDs across roles. Member checking techniques were used to ensure accurate data representation. In addition, audit trails and critical reflection are consistently applied to maintain transparency in the analysis process and increase the credibility of the research in describing the dynamics of teachers' mindsets in marginalized areas.

RESULTS AND DISCUSSION

Results

1. *Growth Mindset as the Foundation for Implementing the Deep Learning Approach*

Context analysis shows that the growth mindset of early childhood education (PAUD) teachers in the 3T (third-third) regions is formed in a situation of geographical limitations, minimal learning resources, and limited access to ongoing professional training. Teachers work in conditions where technical guidance for implementing the deep learning approach is not always adequately available, so learning practices rely heavily on personal reflection and direct classroom experience. Within a strong local socio-cultural context, teachers interpret learning as a process that must align with the child's life world and the realities of their community. This context encourages a shift in teachers' perspectives on learning challenges. Under these limitations, a growth mindset functions as an internal resource to maintain the belief that children can develop through a fun and relational learning process. Limited resources also shape teachers' pedagogical strategies, which are based on the surrounding environment. The novelty of this finding lies in the revelation that a growth mindset in the context of early childhood education (PAUD) in the 3T (third-third) regions is not simply an individual psychological disposition, but rather a contextual-adaptive mechanism that enables teachers to maintain meaningful learning amidst structural limitations. A growth mindset serves as a practical foundation for implementing deep learning based on the local context, without reliance on high-tech or external resources.

2. Growth Mindset in Facing the Challenges of Deep Learning Implementation

Context analysis shows that the implementation of the deep learning approach in early childhood education (PAUD) in the 3T (third-third) region (3T) took place amidst disparities in digital infrastructure, the dominance of one-way teaching practices, and minimal policy support at the educational unit level. These conditions shaped teachers' initial perceptions that deep learning was synonymous with digital technology-based learning, which was difficult to implement in their environment. However, through practical experience and contextual reflection, teachers began to reconstruct the meaning of deep learning as a learning process focused on depth of interaction and meaning. In a heterogeneous classroom context, teachers shifted learning interaction patterns to dialogic ones. The novelty of this finding lies in the assertion that a growth mindset serves as a driver for the conceptual redefinition of deep learning in marginalized areas. Deep learning is not practiced as a device-based approach, but rather as a deepening of relationships, dialogue, and reflection, allowing this approach to remain meaningfully implemented within the context of structural limitations.

3. Fixed Mindset as an Obstacle and Adaptive Response

Context analysis shows that a fixed mindset emerges in conditions of structural exhaustion, such as high administrative burdens, minimal ongoing professional support, and geographic isolation that limits the exchange of practices among teachers. In this context, maintaining routine, one-way learning practices is considered the safest and most realistic survival strategy. This suggests that a fixed mindset is not always static, but rather emerges as a response to systemic limitations experienced by teachers on an ongoing basis. The key novelty of this finding lies in interpreting a fixed mindset not merely as an individual psychological barrier, but as a temporary adaptive mechanism in an education system that does not yet fully support reflective and contextual learning. This finding opens up a new perspective that transforming teacher mindsets in the 3T (United Nations) regions requires systemic intervention, not simply individual attitudinal changes.

Discussion

A growth mindset is the main foundation for implementing deep learning in early childhood education (PAUD) in the 3T (Third Territories) region. Teachers with a growth mindset believe that pedagogical skills can be improved through reflection, consistent effort, and continuous learning (Guttin et al., 2022; Ronkainen et al., 2019). Amidst limited infrastructure and a lack of innovative training, this mindset enables teachers to adapt creatively. They are able to design meaningful learning without relying on high technology, and position children as active participants in thinking, asking questions, and reflecting on the learning experience—the core of the deep learning approach (Andrews et al., 2023).

The impact of a growth mindset is also evident in children's development. Teachers with a growth mindset create a classroom culture that encourages effort, persistence, and learning from mistakes. This helps children develop autonomy and positive learning habits (Fraser, 2018). Boylan et al., (2024) emphasizes that this mindset increases children's engagement, intrinsic motivation, and academic achievement. In the context of early childhood education (PAUD), the teacher's role is crucial in shaping children's attitudes toward the long-term learning process.

Besides having an impact on children, growth mindset strengthens teachers' professionalism. Chien & Sun (2025) found that teachers who believe in the flexibility of their abilities are more open to self-development and innovative practices. In the context of the 3Ts, this is key to professional resilience. Teachers with a growth mindset not only face challenges but also adapt their practice to align with the spirit of critical, reflective, and contextual deep learning.

The implementation of the deep learning approach in early childhood education (PAUD) in the 3T region faces structural and cultural challenges, such as limited digital infrastructure, the dominance of one-way teaching, and a lack of innovative training (Vitiello et al., 2025). In this situation, a growth mindset is key to transformation. Teachers with a growth mindset focus on creating reflective and contextual learning experiences, rather than relying on high technology (Andrews et al., 2023).

This confirms that teachers are beginning to understand deep learning as a meaningful, interactive process, not a device-based one. This transformation reflects a collective awareness that quality learning lies in relationships and meaning, not fancy tools. Ji et al., (2025); Yu et al., (2017) highlighting the limitations of the effectiveness of traditional approaches and technical barriers to technology integration.

Teachers reconstruct learning through interactions that stimulate children's critical thinking, not just delivering material. The principles of deep learning are realized through exploration, open dialogue, and emotional connection. Chien & Sun (2025) found that teachers with a growth mindset design adaptive cross-context learning and build children's learning autonomy.

This condition strengthens the finding that growth mindset encourages a change in learning culture from passive to active, in line with the analysis (Dalehefte & Canrinus, 2023; T. C. Lee, 2017; Siebörger, 2021)(2023) which highlights the importance of shifting pedagogy to a constructivist approach. Without reflection and instructional support, children tend to get stuck in shallow learning. However, not all teachers are mentally prepared. Wu (2024) Many teachers have not yet internalized a growth mindset, making it difficult to innovate. Training interventions that instill a growth mindset have been shown to improve readiness and the quality of practice (Hecht et al., 2023; Korsager et al., 2023).

The novelty of these findings suggests that growth mindset serves a dual function: as a psychosocial resilience factor for teachers and a catalyst for activating the deepest dimensions of deep learning. Teachers act as facilitators of meaning, empowering children to think reflectively in situations with limited resources. Fraser, (2018); Levytskyi et al., (2024); Morales-Navarro et al., (2024) confirms that growth mindset increases engagement, motivation, and a sustainable collaborative classroom culture (Ku & Stager, 2022).

A fixed mindset is a crucial obstacle to implementing the deep learning approach in early childhood education (PAUD), particularly in the 3T (third-third) regions. Teachers with a fixed mindset view abilities as innate and unchangeable traits, thus tending to avoid reflection, reject new approaches, and maintain one-way teaching practices (Campbell et al., 2020; Hallahan, 2020b; Zhao, 2022). In fact, deep learning requires flexibility, exploration, and a willingness to face challenges, characteristics that are in line with a growth mindset (Jones & Straub, 2017; Zappe et al., 2017). However, in the context of minimal training and professional isolation, Fixed mindset often becomes an adaptive response to structural fatigue. Studies Anderson (2014), Boylan et al. (2024), and Lu et al. (2023) shows that this mindset reduces creativity, strengthens relational conflict, and reduces children's motivation to learn.

The novelty of this study lies in the revelation that a fixed mindset in marginalized areas is not simply a psychological issue, but a coping mechanism for a system that does not support reflective learning. Teachers exhibit signs of a shift in locus of control from external to internal, opening up space for mindset transformation if supported by contextual training and a collaborative learning community (Memari, 2024; Zappe, 2017).

CONCLUSION

Based on the above results, it can be concluded that this study confirms that teacher mindset is the main foundation in implementing the Idi PAUD deep learning approach in the 3T region. Teachers with a growth mindset are able to transform limitations into opportunities for innovation through reflective and contextual learning. They create a collaborative, meaningful, and joyful learning environment, and encourage children to think critically and learn from mistakes. In contrast, a fixed mindset is a major obstacle that triggers resistance to change and maintains a one-way approach. However, in marginalized contexts, a fixed mindset is often an adaptive response to structural pressures and professional isolation. These findings provide a new contribution that mindset transformation is not just an individual issue, but a systemic agenda that requires support through contextual training and reflective learning communities. Therefore, strengthening a growth mindset needs to be a priority in teacher professional development, as a strategy to ensure that the Idi PAUD deep learning approach is truly child-centered and contextualized to the challenges of the 3T region.

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