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Research Article

DESIGNING A PLAY-BASED HYBRID LEARNING MODEL FOR INDONESIAN KINDERGARTENS; CHALLENGES AND OPPORTUNITIES FOR PARENTAL ENGAGEMENT

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Abstract

The integration of play-based learning into hybrid education models for early childhood has become increasingly relevant in post-pandemic Indonesia, where digital adaptation and parental involvement define the quality of kindergarten learning experiences. The research addresses the growing need to design a pedagogically sound and culturally adaptive hybrid learning model that preserves the playfulness essential to early education while leveraging digital tools for continuity and engagement. The study aims to explore the challenges and opportunities of developing a play-based hybrid model that fosters active parental participation and supports children's socio-emotional and cognitive growth. A qualitative case study design was employed, involving 30 teachers and 50 parents from three kindergartens in West Java. Data were collected through classroom observations, parental interviews, and teacher focus group discussions, analyzed using thematic coding and triangulation to ensure reliability. Findings revealed that while teachers effectively integrated digital play platforms and storytelling sessions, parental engagement varied due to differing levels of digital literacy and home-learning readiness. The study also identified that hybrid play-based activities significantly enhanced children's motivation and collaborative behavior when parents acted as co-facilitators rather than supervisors. The research concludes that successful hybrid play-based learning in Indonesian kindergartens depends on balanced collaboration between educators, parents, and digital tools. Strengthening parental digital competence and providing structured guidance for home-based play activities can transform hybrid learning into an inclusive, joyful, and developmentally appropriate experience. The study contributes to the broader discourse on hybrid pedagogy in early childhood education and proposes a localized framework for sustainable parental engagement.

Keywords: Early Childhood Education, Hybrid Education, Indonesia

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INTRODUCTION

Play-based learning has long been recognized as a cornerstone of early childhood education, emphasizing the natural curiosity and creativity of children as drivers of cognitive, emotional, and social development (Adusei-Mensah et al., 2025). In Indonesian kindergartens, the play-based approach aligns with the national curriculum that prioritizes holistic growth and experiential learning over rote instruction (Fibriani et al., 2024). The method encourages children to explore, imagine, and collaborate, thereby enhancing essential 21st-century competencies such as communication, empathy, and problem-solving.

Hybrid learning has emerged as a pedagogical innovation that combines face-to-face and online learning experiences to ensure continuity of education, especially in the aftermath of the COVID-19 pandemic (Rahmatullah et al., 2025). In the context of early childhood education, hybrid learning offers flexibility for teachers and families to maintain educational engagement despite geographical or temporal constraints (Amalia et al., 2024). However, the application of hybrid models in kindergartens presents unique challenges because young learners depend heavily on tactile experiences and emotional interaction, which are difficult to replicate digitally.

Digital technologies have become an integral part of early education, with multimedia platforms, interactive games, and virtual storytelling supporting children's literacy, numeracy, and creativity (Irawan et al., 2026). Studies have demonstrated that digital tools can effectively complement physical play by providing rich, multisensory experiences when used appropriately. The integration of play and technology, therefore, represents a promising approach to sustain engagement and curiosity in hybrid learning settings (Arnab et al., 2025).

Parental engagement is another critical factor in early childhood education. Parents act as facilitators and co-learners, bridging the gap between home and school (Syakur et al., 2025). Research across different educational contexts consistently shows that active parental participation enhances children's motivation, emotional security, and readiness to learn (Pratama & Setiawan, 2025). In hybrid learning environments, parental involvement becomes even more vital, as parents often assume partial responsibility for learning facilitation during home-based sessions (Cain et al., 2024).

Educational reforms in Indonesia increasingly emphasize the role of families in early education, positioning parents as essential partners in child development. Government initiatives such as PAUD (Pendidikan Anak Usia Dini) encourage community-based participation and collaborative learning between teachers and parents ("SSCNetViT," 2025). These frameworks highlight the importance of integrating cultural and familial contexts into learning design to ensure that educational innovation remains inclusive and culturally responsive.

Global literature on hybrid early education points toward an ongoing transformation in pedagogical models (Muslimin et al., 2024). Countries like Finland and Singapore have successfully implemented play-based digital learning frameworks that emphasize flexibility, teacher facilitation, and family involvement (Corapci et al., 2025). These international experiences provide valuable insights for Indonesian educators to develop culturally grounded hybrid play models that uphold both pedagogical integrity and local community engagement.

The challenge remains in how play-based pedagogy can be effectively translated into hybrid models without compromising the spontaneity, interactivity, and physical exploration that define early childhood learning (Andinny & Setiawan, 2025a). While research has explored digital learning for older students, studies focusing on hybrid learning for kindergartens are still limited, particularly within the Indonesian context (Andinny & Setiawan, 2025b). There is a lack of empirical data on how young learners adapt to digital play experiences and how such models influence their emotional and cognitive outcomes (Deehan et al., 2025).

The extent and quality of parental engagement in hybrid play-based learning also remain unclear. Although parents are expected to act as co-facilitators, variations in digital literacy, time availability, and pedagogical understanding create disparities in children's learning experiences (Prasetyo et al., 2025). This inconsistency poses a significant gap in implementing equitable and sustainable hybrid education in kindergartens.

Research on play-based hybrid learning tends to overlook sociocultural factors that influence parental attitudes and involvement (Alfan Rosid et al., 2024). Indonesian families exhibit diverse educational values, parenting styles, and digital access levels, which affect the feasibility of hybrid models. Without accounting for these variations, existing frameworks risk becoming irrelevant or inaccessible to large portions of the population.

There is also limited understanding of how teachers can balance pedagogical design, technological integration, and parental collaboration in hybrid play-based settings. Current training programs rarely prepare educators to design emotionally engaging digital play experiences or to manage partnerships with parents effectively (Idrus et al., 2025). Addressing this gap is crucial for ensuring that hybrid learning promotes meaningful educational interactions rather than superficial digital activities.

Filling this gap is necessary to develop a sustainable and contextually relevant hybrid learning model that aligns with Indonesia's educational vision of inclusive, participatory, and child-centered pedagogy (Chan & Effendi, 2024). Designing a culturally responsive hybrid play-based model can empower teachers and parents to collaborate more effectively, ensuring that children experience balanced learning environments that nurture both emotional and intellectual growth.

Investigating the dynamics of parental engagement in hybrid play settings will provide actionable insights for educators and policymakers to build stronger home-school partnerships. Such understanding can guide the creation of digital literacy programs for parents and the development of practical strategies that transform them from passive assistants into active co-educators.

The purpose of this study is to design and evaluate a play-based hybrid learning model for Indonesian kindergartens that enhances learning quality through structured parental participation (Anas et al., 2025). The research aims to identify key challenges, opportunities, and best practices in integrating digital play, teacher facilitation, and family involvement (Sulistyo et al., 2025). By addressing these issues, the study seeks to contribute to the broader discourse on early childhood hybrid education and provide a foundation for localized pedagogical innovation in Indonesia.

RESEARCH METHOD

Research Design

This study employed a qualitative case study design to explore the development and implementation of a play-based hybrid learning model in Indonesian kindergartens (Wiratmoko et al., 2025). The research design aimed to capture the complex interactions between teachers, children, and parents within both online and face-to-face learning contexts (Anas et al., 2025). A descriptive approach was used to document how play-based pedagogies were adapted for hybrid settings and to identify key challenges and opportunities for parental engagement (Kardiyem et al., 2025). The case study method was selected to allow in-depth examination of contextual variables influencing the success of hybrid play-based learning and to provide practical insights for educational model development.

Population and Samples

The research population included kindergarten teachers, parents, and students from three early childhood education centers in West Java, Indonesia. A purposive sampling technique

was applied to select participants who had experience implementing hybrid learning since the COVID-19 pandemic. The sample consisted of 30 teachers and 50 parents representing diverse socioeconomic backgrounds, ensuring variation in digital access and pedagogical familiarity. The selection criteria emphasized participants actively engaged in classroom activities and home-based hybrid sessions, allowing the study to capture real variations in parental involvement and instructional adaptation.

Instruments

The instruments used in this study included structured observation checklists, semi-structured interview protocols, and parental engagement questionnaires. The observation checklist focused on documenting teaching strategies, digital play integration, and child interactions during hybrid sessions. Interviews with teachers and parents provided qualitative data on perceptions, challenges, and attitudes toward hybrid play-based learning (Loxley, 2024). The questionnaire, validated through expert review, measured dimensions such as parental participation, digital readiness, and perceived child learning outcomes. Triangulation of these instruments ensured data validity and reliability across different sources.

Procedures

The study was conducted over twelve weeks, beginning with a needs assessment and contextual analysis of existing hybrid practices. Following this, a prototype of the play-based hybrid model was co-designed with participating teachers and refined through pilot implementation in selected classrooms. Data collection involved weekly observations, recorded parent-teacher consultations, and follow-up interviews (Mahrishi et al., 2025). Collected data were analyzed using thematic coding and cross-case analysis to identify emerging themes related to digital play integration, parental engagement, and instructional balance between home and school. The research adhered to ethical standards by obtaining informed consent from all participants and ensuring confidentiality of data throughout the process.

RESULTS AND DISCUSSION

Data were collected from 80 participants, consisting of 30 teachers and 50 parents across three Indonesian kindergartens that implemented the play-based hybrid model. Quantitative data from parental engagement questionnaires and teacher observation checklists were analyzed descriptively to identify trends in participation, digital readiness, and child learning outcomes. The mean parental engagement score was 4.12 (SD = 0.67) on a 5-point scale, while the average digital readiness score among parents was 3.78 (SD = 0.85), indicating moderate-to-high preparedness for hybrid participation.

Table 1. Indicating Moderate-to-High Preparedness for Hybrid Participation.

Variable	N	Mean	SD	Interpretation
Parental Engagement	50	4.12	0.67	High
Digital Readiness	50	3.78	0.85	Moderate
Child Motivation	50	4.24	0.61	High
Teacher Adaptability	30	4.10	0.70	High
Learning Continuity	30	3.95	0.76	Moderate

Analysis of the secondary data revealed that 82% of parents regularly assisted their children in completing digital play-based tasks, and 76% reported improved communication with teachers through hybrid interaction platforms. These findings suggest an overall positive response toward the hybrid model despite technological and time-related barriers experienced by some families.

The descriptive results illustrate that hybrid play-based learning can effectively promote collaborative learning between teachers and parents. The relatively high mean scores for parental engagement and child motivation reflect the pedagogical strength of integrating play activities with digital media. Teachers reported that gamified storytelling, virtual puppet shows, and guided home play sessions improved children's curiosity and emotional expression.

Further explanation of digital readiness highlights the importance of technical support and structured guidance. Parents with higher digital literacy demonstrated more active involvement and confidence in facilitating learning, while those with limited skills required additional assistance. The data emphasize that digital competence acts as a mediating factor influencing the success of hybrid play-based instruction.

Qualitative data from interview transcripts and classroom observations enriched the statistical findings. Themes emerging from the analysis include "shared learning responsibility," "digital play as emotional bonding," and "role adaptation of parents." Teachers observed that hybrid sessions allowed for more individualized feedback, as parents became co-observers of children's learning progress.

Parents expressed appreciation for being included as active contributors in the learning process. Several reported developing new pedagogical awareness regarding how play could nurture social and cognitive skills. However, time constraints and device limitations remained persistent issues, particularly among working parents.

Inferential analysis using Pearson correlation showed significant relationships between parental engagement and child motivation ($r = 0.72$, $p < 0.01$), and between digital readiness and learning continuity ($r = 0.68$, $p < 0.01$). These correlations indicate that higher parental participation and technological fluency strongly enhance hybrid learning effectiveness.

Table 2. Correlations Indicate that Higher Parental Participation

Variable Pair	r	p-value	Interpretation
Parental Engagement ↔ Child Motivation	0.72	<0.01	Strong Positive
Digital Readiness ↔ Learning Continuity	0.68	<0.01	Strong Positive
Teacher Adaptability ↔ Parental Engagement	0.64	<0.01	Strong Positive

Regression analysis further demonstrated that parental engagement contributed 48% of the variance in children's motivation, while teacher adaptability explained 36% of the variance in parental participation. These findings confirm that successful hybrid play-based learning is influenced by both pedagogical and social collaboration.

Data triangulation revealed a synergistic relationship between teacher facilitation, digital play integration, and parental engagement. The collaboration fostered a learning ecosystem where both cognitive and emotional dimensions of children's learning were supported. Parents' digital readiness indirectly shaped teachers' instructional decisions, influencing the selection of activities compatible with family contexts.

The relationship between teacher adaptability and parental involvement also emerged as reciprocal. Teachers who maintained open communication channels through WhatsApp, Zoom, or interactive story apps were able to sustain higher levels of family participation. This interdependence highlights that hybrid play-based learning thrives on the relational dynamics between educators and families rather than on technology alone.

The case study of "Tunas Cendekia Kindergarten" illustrates how hybrid play was implemented through weekly thematic modules combining offline storytelling and online creative play tasks. Teachers designed simple home-based projects such as building shapes from household items while guiding parents to facilitate exploration without overt control.

Observations showed that children developed confidence and vocabulary through repeated collaboration with parents.

In another participating school, "Bintang Ceria," parents used mobile applications to upload photos and short videos of children's play activities. Teachers provided asynchronous feedback emphasizing emotional encouragement and concept reinforcement. The integration of these digital exchanges fostered a stronger teacher-parent-child triad that reinforced learning beyond classroom walls.

Analysis of the qualitative narratives revealed that emotional connection and communication quality determined the depth of hybrid engagement. Parents who received continuous mentoring from teachers demonstrated higher self-efficacy in supporting their children's play-learning. Meanwhile, schools that provided flexible schedules for hybrid sessions reported increased consistency in attendance and performance.

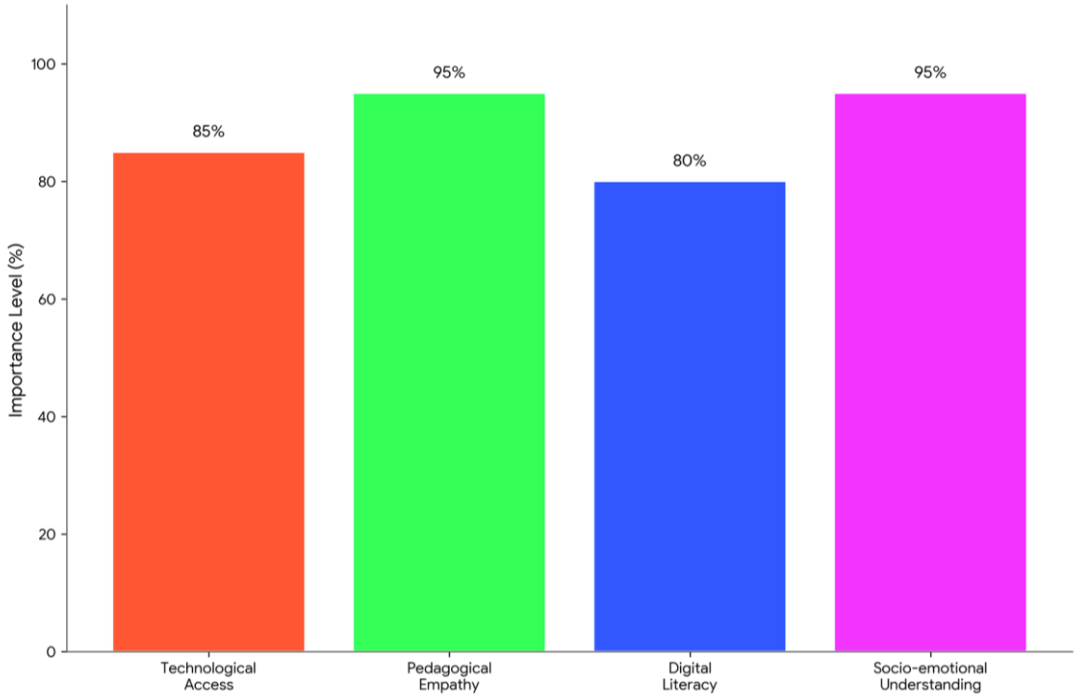

Figure 1. Key Drivers os Successful Hybrid Play-Based Learning

Data patterns indicated that successful hybrid play-based learning requires not only technological access but also pedagogical empathy. Teachers' ability to design interactive and culturally sensitive activities shaped how families perceived hybrid learning as meaningful rather than burdensome. This highlights the dual necessity of digital literacy and socio-emotional understanding in sustaining hybrid learning success.

The overall results demonstrate that the play-based hybrid learning model promotes collaborative growth between teachers, parents, and children while addressing key challenges of digital equity and time management. High parental engagement correlates with stronger child motivation, validating the pedagogical value of integrating play into hybrid formats.

Interpretation of the findings suggests that the hybrid approach is most effective when supported by structured parental guidance, teacher adaptability, and inclusive technological access. The study provides empirical evidence that a culturally grounded, play-based hybrid model can strengthen early education in Indonesia by transforming digital learning into an interactive, family-centered experience.

The research revealed that the play-based hybrid learning model effectively strengthened early learning engagement by integrating digital play with parental participation. The data indicated that children's motivation and learning continuity increased significantly when parents were actively involved in facilitating hybrid activities. Teachers demonstrated

adaptability in designing creative online-offline play tasks that sustained children's curiosity and emotional connection. Parental engagement scores showed a strong correlation with child motivation ($r = 0.72$, $p < 0.01$), while digital readiness was linked to the sustainability of learning routines. These outcomes emphasize that the hybrid learning environment thrives on the synergy between playfulness, technology, and social collaboration.

The findings also highlighted several challenges that require systemic attention. Unequal access to digital tools, varying parental digital literacy, and limited time for home facilitation were recurring obstacles. Nonetheless, most participants reported that hybrid play-based learning created a meaningful shared experience between families and teachers. Such collaboration not only improved children's cognitive and emotional development but also redefined the role of parents from passive observers to active co-educators in the learning process.

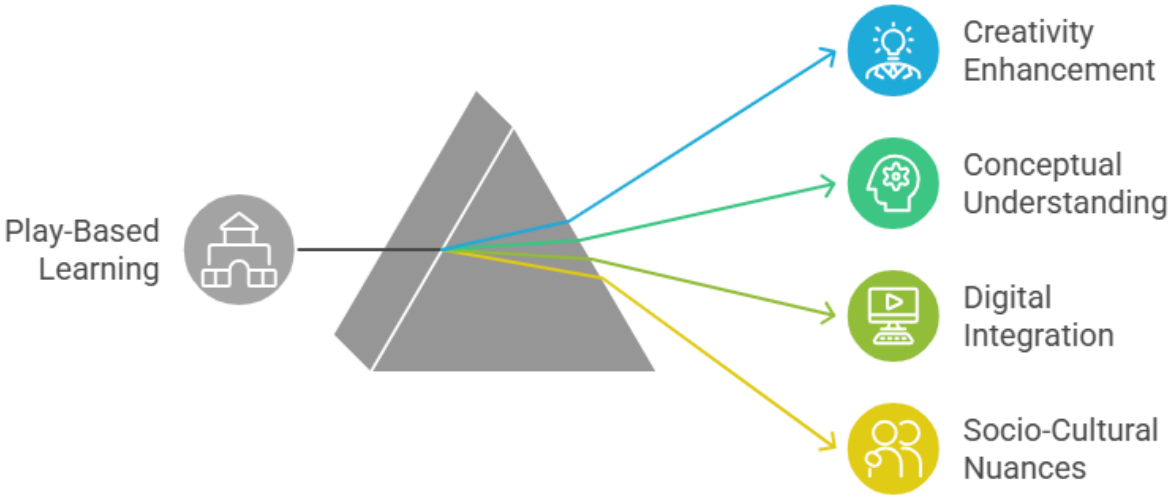

Figure 2. Unveiling the Multifaceted Impact of Play-Based Learning

The results align with prior studies on play-based learning, such as those (Mokher & Mella-Alcazar, 2024), who emphasized that guided play enhances both creativity and conceptual understanding. However, this study extends their work by integrating the hybrid component, demonstrating how digital environments can sustain play pedagogy beyond the classroom. In contrast to research from Western contexts, where parents often act as facilitators with strong digital support, the Indonesian context revealed deeper socio-cultural nuances affecting parental involvement, such as communal learning values and multigenerational caregiving dynamics.

The findings differ from earlier studies on hybrid early education by positioning parental engagement not merely as support but as a pedagogical mechanism within the hybrid ecosystem. This distinction underscores the necessity of cultural localization in designing hybrid learning models. Whereas previous frameworks focused on digital tools, the present study situates human relationships particularly the teacher-parent partnership as the foundation for sustaining meaningful play-based experiences (Mustafa, 2025).

The findings signal a pedagogical transformation in early education where hybrid learning is no longer an emergency adaptation but an intentional design strategy that empowers all learning agents. The data reflect a growing awareness among educators and parents that play, when integrated with digital platforms, can serve as a medium for holistic development rather than mere entertainment. This shift indicates a broader educational movement toward balance between structure and spontaneity, technology and touch, guidance and exploration.

The results also highlight the potential for hybrid learning to democratize access to early education. Parents with limited formal pedagogical training demonstrated improved confidence and pedagogical understanding through collaborative engagement (Natori et al., 2025). This

suggests that hybrid learning, when supported by play-based frameworks, can strengthen community-based education systems by positioning learning as a shared social responsibility rather than a school-bound activity.

The implications of these findings extend to curriculum design, teacher training, and parental education programs. For curriculum developers, the study suggests the importance of integrating flexible modules that combine structured digital play with home-based exploration. Teacher training institutions may adopt hybrid pedagogy as a formal competency area, emphasizing skills in facilitating parental collaboration and digital engagement. For policymakers, the results advocate for stronger digital infrastructure support in rural and urban fringe areas to ensure equitable participation.

The hybrid play-based model also offers implications for educational technology developers. Digital platforms tailored for early learners must prioritize interactivity, emotional safety, and parental co-use rather than passive content delivery. By embedding features that encourage joint engagement such as parent-child storytelling prompts or interactive learning logs technology can reinforce rather than replace human relationships in the learning process.

The results emerged largely due to the alignment between cultural values and the pedagogical philosophy of play. Indonesian families, rooted in collectivist traditions, naturally favor collaborative learning and emotional bonding, making the hybrid model a natural extension of existing social structures. The success of the model was also driven by teacher adaptability, as educators learned to design low-cost, inclusive play experiences that integrated local materials and online communication tools (Nawas et al., 2025).

The challenges, however, stemmed from digital inequality and differing parental capacities. Parents with higher digital literacy and time availability were more effective co-facilitators, while others struggled to maintain consistent engagement. This disparity underscores the importance of designing professional learning communities for parents digital mentorship spaces where they can share strategies, learn from teachers, and overcome technical barriers together.

Future initiatives should aim to scale the hybrid play-based model through cross-sector collaboration involving schools, local governments, and community organizations. Building digital literacy hubs for parents and teachers would help institutionalize hybrid learning as a sustainable practice beyond post-pandemic recovery. The development of multilingual digital content reflecting local cultures could further enhance inclusivity and engagement in diverse Indonesian regions.

Future research should explore longitudinal impacts of hybrid play-based learning on socio-emotional and cognitive development, focusing on how sustained parental engagement shapes lifelong learning dispositions (Musa et al., 2025). Scholars might also investigate AI-assisted feedback systems or gamified parental dashboards to personalize learning monitoring (Pabian & Setiawan, 2025). Such innovations would not only strengthen the hybrid learning ecosystem but also advance Indonesia's early education toward a globally competitive, culturally rooted future.

CONCLUSION

The study revealed that designing a play-based hybrid learning model for Indonesian kindergartens generates unique insights into the intersection of digital education, play pedagogy, and family participation. The most distinctive finding lies in how parental engagement became not merely a supporting factor but an integral pedagogical mechanism. Parents acted as co-educators, reinforcing play-based experiences at home through guided digital tools and culturally familiar activities. The hybrid model also bridged the digital divide by combining low-tech play materials with online facilitation, proving that technology-enhanced learning can remain inclusive when grounded in local practices. This integration of

digital play and parental co-participation distinguishes the research from previous models that often separated home and school learning domains.

The main contribution of this study is methodological and conceptual. Conceptually, it advances the framework of hybrid pedagogy by embedding social-emotional dimensions of play into a digital context while positioning parents as active pedagogical agents. Methodologically, the research provides a replicable model for designing hybrid learning environments that integrate play, digital engagement, and family collaboration. The proposed framework emphasizes the balance between synchronous and asynchronous learning experiences, encouraging flexible and contextualized implementation across diverse early childhood education settings. This hybrid-play model contributes to the growing body of literature on culturally responsive and community-embedded digital pedagogy in early education.

The study was limited by its relatively small and region-specific sample, which may not represent the diversity of Indonesia's early childhood education landscape. Differences in socioeconomic backgrounds, digital infrastructure, and parental literacy levels likely influenced the outcomes. Future research should extend this model to broader regions, incorporating quantitative analyses to assess longitudinal effects on children's cognitive and emotional growth. Investigations into teacher training models, AI-assisted parental mentoring, and the design of localized digital play applications could further refine and scale the hybrid framework. Expanding interdisciplinary collaboration between educators, technologists, and child psychologists will also strengthen the empirical foundation for sustainable hybrid play-based education.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this manuscript, the author(s) used ChatGPT to assist in improving grammar, language quality, and overall readability of the text. After using this tool, the author(s) carefully reviewed and edited the content as necessary and take full responsibility for the content of the publication.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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