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Parental attitudes toward ai in early childhood: A three-pillar framework

Dinesh Deckker ^{1,*} and Subhashini Sumanasekara ²

¹ Faculty of Arts, Science and Technology, Wrexham University, United Kingdom.

² Faculty of Computing and Social Sciences, University of Gloucestershire, United Kingdom.

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Abstract

Artificial intelligence (AI) is increasingly integrated into early childhood education through adaptive learning platforms, conversational agents, and AI-enabled toys. While governments and technology firms promote these tools for their potential to personalise learning and reduce teacher workload, parental perspectives remain underexplored, despite parents' role as primary gatekeepers of young children's digital experiences. This narrative review synthesises literature published between 2020 and 2025 to examine how parents perceive the promises and risks of AI in early learning - drawing on a three-pillar conceptual framework - Trust, Cultural Values, and Digital Literacy. The study analyses how these dimensions interact to shape parental acceptance, conditional support, or resistance. Findings indicate that transparency and teacher oversight foster trust, while cultural misalignment and low digital literacy often produce scepticism or passive adoption. The review highlights the need for culturally responsive AI design, plain-language data transparency, and parental digital literacy programs. It concludes that effective and ethical integration of AI in early childhood education requires policies and practices that engage parents as informed partners rather than passive consumers.

Keywords: Artificial intelligence; Early childhood education; Parental attitudes; Trust; Digital literacy; Cultural values

1. Introduction

Artificial intelligence (AI) is increasingly present in early childhood education, from adaptive learning platforms and conversational agents to AI-enabled toys and classroom analytics. These tools are often promoted as solutions for personalising instruction, boosting engagement, and reducing teacher workload (Selwyn et al., 2023). Nevertheless, their rapid introduction into children's most formative years raises profound concerns. Early childhood is a period when social, cognitive, and emotional foundations are laid; technologies introduced at this stage can have long-lasting developmental consequences. Despite the acceleration of AI in nurseries, preschools, and homes, one group of stakeholders, parents, remains underrepresented in the debate.

Parents are not passive observers. They act as gatekeepers of digital access, mediators of home learning environments, and primary protectors of children's wellbeing (Livingstone & Blum-Ross, 2020). Their attitudes shape whether AI is trusted, resisted, or adopted without question. Unlike traditional educational technologies, AI systems adapt to children's behaviour, collect extensive data, and often operate through opaque algorithms (Hasse & Bruhn Jensen, 2022). This makes parental evaluation both more complex and more urgent. Existing research has examined digital safety and screen time (Plowman et al., 2012). However, the specific ethical and developmental issues raised by AI—such as surveillance, algorithmic opacity, and simulated social interaction—have received limited critical attention.

* Corresponding author: Dinesh Deckker

Two gaps are evident. First, current studies remain fragmented, often descriptive, and unevenly spread across different cultural contexts, with Western countries being overrepresented (Price, 2023; Lake, 2023). Second, little is understood about how parents' digital literacy, cultural values, and trust in institutions interact to influence their reactions to AI in early education. These factors probably determine whether AI is embraced as an educational opportunity, tolerated cautiously, or outright rejected.

To address these gaps, this study conducts a narrative review of empirical and theoretical literature published between 2020 and 2025. It synthesises evidence across global contexts to explore how parents perceive both the promises and perils of AI in early learning. To structure this analysis, we propose a three-pillar conceptual framework - Trust, Cultural Values, and Digital Literacy, which together explain how parental attitudes toward AI are formed and negotiated. This framework anchors the thematic synthesis that follows and provides a lens for interpreting the ethical and policy implications of AI in early childhood education.

1.1. Research Questions

- RQ1 – Trust Dimension: How do parental perceptions of transparency, data privacy, and institutional accountability influence their trust in AI tools for early childhood education?
- RQ2 – Cultural Values Dimension: In what ways do cultural norms and educational philosophies shape parental acceptance or rejection of AI in early childhood learning environments?
- RQ3 – Digital Literacy Dimension: How does parental digital literacy—defined as knowledge, awareness, and evaluative ability—affect their decision-making about children's interaction with AI technologies?
- RQ4 – Interplay of Dimensions: How do trust, cultural values, and digital literacy interact to produce patterns of resistance, conditional acceptance, or endorsement of AI in early childhood education?
- RQ5 – Policy Implications: What governance and educational strategies can address parental concerns across these three dimensions to promote ethical and developmentally appropriate AI use?

1.2. Conceptual Framework: The Three Pillars of Parental Attitudes Toward AI in Early Childhood Education

This framework conceptualises parental attitudes toward AI in early childhood education as shaped by the interaction of three interdependent pillars: Trust, Cultural Values, and Digital Literacy. Each pillar mediates how parents interpret the risks and benefits of AI, and together they determine whether AI adoption is resisted, conditionally accepted, or embraced.

- Trust (Transparency and Accountability)
 - Core Idea: Parental support for AI hinges on trust in the technology and the institutions deploying it.

Key Dimensions

- Transparency of Functioning: Parents demand clear explanations of how AI collects, processes, and uses data.
- Accountability Structures: The presence (or absence) of regulatory oversight, school communication, and enforceable privacy protections directly influences parental trust (European Commission, 2024).
- Perceived Safety: Parents are more accepting of AI when assured that content is age-appropriate and ethically vetted (Common Sense Media, 2025).
- Implication: Without demonstrable transparency and accountability, mistrust dominates parental discourse, regardless of potential educational benefits.
- Cultural Values (Educational Norms and Societal Expectations)
 - Core Idea: Parental attitudes are filtered through culturally specific notions of what constitutes "good" education and childhood.

Key Dimensions:

- Pedagogical Alignment: Parents in Nordic contexts, where play-based education is valued, often reject AI perceived as overly didactic, while parents in East Asia may embrace it for competitive academic gains (Lake, 2023).
- Moral and Ethical Concerns: Religious or conservative communities may view AI tutors as crossing ethical boundaries in shaping values and behaviours.
- Socialisation Expectations: Parents evaluate whether AI fosters or hinders empathy, cooperation, and interpersonal skills (Turkle, 2011).
- Implication: AI that aligns with prevailing educational and moral frameworks is more likely to be accepted, while culturally incongruent systems encounter resistance.

- Digital Literacy (Knowledge and Critical Awareness)
 - Core Idea: Parents' ability to understand and critically evaluate AI technologies determines whether adoption is informed or passive.

Key Dimensions:

- Awareness of AI Functions: Many parents remain unaware that children's toys or apps use adaptive algorithms (Barna Group, 2024).
- Ability to Assess Risks: Digitally literate parents scrutinise issues of data privacy, bias, and developmental appropriateness more effectively (Hasse & Bruhn Jensen, 2022).
- Socioeconomic Inequalities: Families with lower digital access or literacy often accept AI tools provided by schools without critical assessment, raising equity concerns (Livingstone & Helsper, 2007).
- Implication: Low digital literacy can lead to passive adoption and vulnerability to risks, while high literacy fosters selective, critical integration of AI.

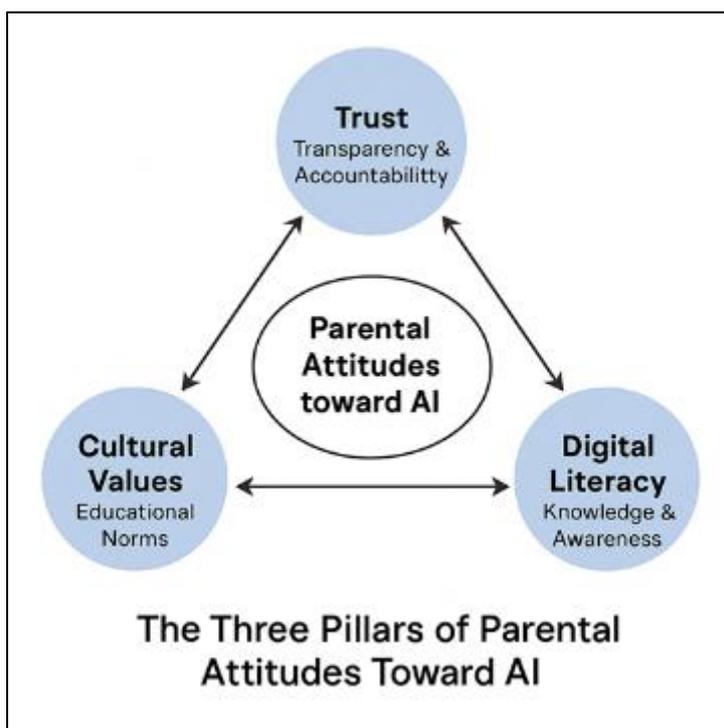


Figure Note. Arrows indicate the bidirectional interplay among trust, cultural values, and digital literacy. Together, these three pillars shape parental attitudes toward AI in early childhood education, influencing acceptance, conditional support, or resistance.

Figure 1 The Three-Pillar Framework of Parental Attitudes Toward AI in Early Childhood Education

1.2.1. Interplay of the Three Pillars

These pillars do not operate in isolation. For example, a digitally literate parent (Pillar 3) in a culture that values technological competitiveness (Pillar 2) may still reject AI if trust mechanisms (Pillar 1) are absent. Conversely, a low-literacy parent in a highly regulated and transparent system may adopt AI despite limited understanding.

This tri-pillar framework positions parental attitudes as dynamic outcomes of trust, cultural context, and digital literacy, offering a structured lens for analysing global patterns and informing ethical AI policy design.

2. Methodology

This study adopts a narrative review methodology to synthesise recent scholarship on parental attitudes toward AI in early childhood education. The choice of a narrative rather than a systematic review reflects both the emerging nature of the field and the need to integrate insights across diverse disciplines, including developmental psychology, educational technology, and AI ethics. Unlike systematic reviews, which prioritise exhaustive coverage, narrative reviews enable critical thematic analysis and theoretical integration (Snyder, 2019).

2.1. Scope and Selection

The review focused on peer-reviewed studies, large-scale surveys, and authoritative institutional reports published between January 2020 and May 2025. This time frame was chosen to capture the surge of research following the mainstreaming of generative AI technologies. Literature was drawn primarily from Scopus, Web of Science, ERIC, and PsycINFO, supplemented with targeted searches of Google Scholar for policy reports by organisations such as UNESCO and the European Commission.

2.2. Search Approach

Keyword combinations included:

- *“parental attitudes” AND “artificial intelligence”*
- *“AI” AND “early childhood education”*
- *“smart toys” OR “AI tutors” AND “parents”*
- *“child development” AND “AI” AND “privacy”*

Snowballing was used to trace additional relevant studies from the references of key papers. While the review does not claim exhaustive coverage, care was taken to represent diverse cultural contexts and methodological approaches, thereby avoiding over-reliance on Western or English-language perspectives.

2.3. Thematic Organisation

The selected literature was organised around the three pillars of the proposed conceptual framework—Trust, Cultural Values, and Digital Literacy—with cross-cutting themes including privacy, developmental impact, and equity. This framework-guided synthesis ensured conceptual coherence and allowed for comparison across sociocultural contexts.

2.4. Limitations

As a narrative review, this study is interpretive rather than exhaustive. The absence of a systematic screening protocol means some relevant studies may have been omitted. However, the approach allows for greater theoretical depth and contextual integration, which are particularly valuable given the evolving and interdisciplinary nature of parental perspectives on AI.

3. Literature Review

3.1. Parental Trust in AI: Transparency, Data, and Institutional Confidence

Trust is the foundational dimension shaping parental attitudes toward AI in early childhood education. Existing literature indicates that parental acceptance hinges on how transparent, accountable, and human-centred AI tools appear to be. When parents are unsure about what an AI system does, how it uses data, or who governs its operation, scepticism and resistance increase sharply (Hasse & Bruhn Jensen, 2022).

A key area of mistrust is data collection and surveillance. AI-enabled toys, home learning apps, and classroom systems often collect sensitive biometric, behavioural, and voice data. Studies reveal that parents are frequently unaware of these mechanisms until alerted by media reports or policy disclosures (Chaudron et al., 2021). A UK-wide survey showed that over 60% of parents had not been informed when AI tools were introduced in their child's classroom (Internet Matters, 2023). This lack of informed consent leads many to view AI as intrusive rather than supportive.

Regulatory gaps exacerbate these concerns. Although frameworks like the GDPR and the EU AI Act (2024) attempt to regulate AI as a “high-risk” category in education, implementation and enforcement remain inconsistent. Parents, particularly those with prior exposure to data breaches or privacy controversies, tend to distrust both the technology and the institutions deploying it (European Commission, 2024).

Parental trust improves when AI tools are used under clear teacher supervision, with limited autonomy and visible human oversight (Selwyn et al., 2023). Conversely, tools that interact directly with children—such as chatbots or adaptive toys—trigger fears of emotional detachment, unpredictable behaviour, or unauthorised data harvesting. Transparency, therefore, is not merely technical—it is deeply relational. It shapes whether parents feel empowered or alienated in their child's AI-mediated learning.

3.2. Cultural Values and Educational Norms

Cultural beliefs about childhood, learning, and technology profoundly shape parental responses to AI in early childhood education. Unlike trust, which is often linked to transparency and regulation, cultural values operate as a lens through which parents interpret the very role of AI in their children's lives.

In East Asian contexts such as South Korea and China, AI is often welcomed as a tool to enhance academic competitiveness. State-endorsed AI tutoring initiatives align with parental aspirations for accelerated learning and educational advantage (Lake, 2023). Here, AI is framed not as a threat to development but as a legitimate strategy for success in high-pressure educational systems. Parents in these contexts are more willing to tolerate concerns about screen time or privacy if AI promises measurable academic gains.

In contrast, Nordic and Western European countries often emphasise play-based, child-centred learning philosophies. Parents in these regions tend to view AI as misaligned with holistic pedagogical traditions that prioritise creativity, social interaction, and unstructured play (Kampylis et al., 2021). For these families, the presence of AI risks shifting education toward standardisation and away from experiential learning.

Cultural and moral frameworks also inform ethical boundaries. In more conservative communities, AI-mediated interactions are sometimes regarded as crossing lines of moral instruction or value transmission, raising questions about whether non-human agents should play any formative role in a child's socialisation (Bourdieu, 1990).

Moreover, global survey data suggests that the same AI tool can elicit drastically different parental responses depending on cultural context. For example, while robotic tutors are widely accepted in Singaporean preschools, UK parents in a 2023 study expressed overwhelming discomfort with AI-powered toys, citing fears of "emotional flattening" and detachment from authentic human care (Price, 2023).

Thus, cultural values shape not only whether parents permit AI but also how they evaluate its appropriateness. What one culture frames as innovative support, another may see as developmental risk. These divergent perspectives underscore the need for culturally responsive AI policies rather than universal approaches.

3.3. Digital Literacy and Parental Capacity

Parental digital literacy plays a decisive role in shaping both the adoption and critical evaluation of AI in early childhood education. Unlike cultural values, which influence whether parents see AI as desirable, digital literacy determines whether they can recognise risks, interpret functionality, and make informed decisions about their children's use of AI tools.

Many parents remain unaware that everyday toys and learning apps already incorporate AI features. Chaudron et al. (2021) found that a significant proportion of European parents assumed children's apps were "safe" simply because they were labelled educational. This knowledge gap often leads to passive acceptance, with parents failing to question data collection practices or the adaptive algorithms shaping their child's learning.

By contrast, digitally literate parents tend to exercise greater scrutiny. They are more likely to inquire about data privacy, algorithmic bias, and developmental appropriateness, and often set boundaries on how AI tools are used (Hasse & Bruhn Jensen, 2022). A U.S. survey by the Barna Group (2024) revealed that parents with higher levels of digital fluency were both more open to AI's potential benefits and more vocal about concerns over surveillance and emotional development.

Socioeconomic factors strongly mediate digital literacy. Families with higher income and education levels usually have greater access to information, training, and technology, enabling them to critically evaluate AI tools (Livingstone & Helsper, 2007). Conversely, parents in low-income contexts may welcome AI platforms provided free through schools as a way to close educational gaps—even when they lack the literacy to assess risks. This dynamic raises questions about equity and informed consent, since lack of awareness does not equate to meaningful approval.

Language barriers compound these challenges. Immigrant and minority-language parents often struggle to navigate AI consent forms or usage guidelines that are available only in majority languages, further limiting their ability to make informed choices (Livingstone & Blum-Ross, 2020).

Overall, digital literacy determines whether parents approach AI as active gatekeepers or passive recipients. Where literacy is low, parents risk surrendering control to institutions and corporations. Where literacy is high, parents

become critical co-decision-makers, capable of negotiating both the opportunities and risks of AI in early childhood learning.

3.4. Interplay of Trust, Cultural Values, and Digital Literacy

While trust, cultural values, and digital literacy each shape parental attitudes independently, the literature indicates that their interplay produces the most significant patterns of acceptance or resistance. Parents rarely evaluate AI in isolation; instead, they weigh its perceived transparency, cultural alignment, and their digital fluency together.

For instance, a digitally literate parent in a Nordic context may understand the mechanics of AI but still reject its use if it conflicts with play-based educational values that prioritise social interaction and creativity. Conversely, a parent in East Asia may have limited technical knowledge of AI yet embrace it enthusiastically if it aligns with cultural imperatives for academic advancement and is endorsed by trusted state institutions (Lake, 2023). These examples illustrate how cultural frameworks and institutional trust can override technical awareness.

Trust can also act as a compensatory mechanism. Parents with low digital literacy may still accept AI tools if they are confident in the transparency of schools or developers. However, when transparency is lacking, even culturally aligned tools face scepticism. Selwyn et al. (2023) found that in the United States, parents with moderate digital skills accepted AI platforms more readily when teachers acted as visible intermediaries, mediating both content and data practices.

Equity concerns are magnified at the intersections of these pillars. Low-income parents often encounter AI through school-mandated or free digital platforms. Their limited digital literacy reduces their ability to question algorithmic opacity, while their lack of alternative resources pressures them to adopt the technology despite concerns (Chaudron et al., 2021). In these cases, cultural trust in educational institutions may lead to silent compliance rather than informed consent.

This tri-dimensional interaction demonstrates why parental attitudes cannot be understood through single variables. Trust without literacy may lead to uncritical acceptance; literacy without cultural alignment may lead to rejection; cultural endorsement without transparency may mask systemic risks. The literature, therefore, underscores the importance of addressing all three pillars simultaneously when evaluating or implementing AI in early childhood education.

4. Discussion

This review highlights that parental attitudes toward AI in early childhood education are neither uniformly resistant nor uncritically accepting, but rather shaped by a dynamic interplay of trust, cultural values, and digital literacy. While existing research emphasises parental concerns over surveillance, emotional development, and teacher replacement, the three-pillar framework developed here allows for a more nuanced understanding of why parents diverge in their responses and how their positions can shift depending on context.

4.1. Beyond Summary: Toward an Interpretive Framework

The evidence suggests that parental trust is conditional, not absolute. Transparency in data use and visible teacher oversight improve parental acceptance, while algorithmic opacity and weak regulatory enforcement intensify scepticism. However, trust alone does not determine acceptance. For instance, parents in high-trust educational systems such as Singapore may endorse AI tools despite limited transparency, illustrating that cultural values and national education strategies can override parental doubts. Conversely, in Nordic contexts, where play-based learning is culturally prioritised, even transparent AI tools often face rejection if they appear to compromise experiential learning. This indicates that cultural alignment can outweigh technical assurances.

Digital literacy adds a further layer of complexity. Literate parents are more likely to interrogate how AI functions, demand regulatory clarity, and establish household boundaries. However, limited digital literacy, particularly in lower-income contexts, produces passive adoption driven by necessity rather than informed choice. Thus, while some scholars argue that AI democratises access to learning by providing free or low-cost platforms (Zviel-Girshin et al., 2024), this review shows that without literacy and trust, such platforms may reproduce inequalities by exposing vulnerable families to greater risks without sufficient safeguards.

4.2. Engaging Counterarguments

Although much of the literature highlights parental scepticism, some scholars contend that AI, if carefully designed, can enhance early learning in ways traditional methods cannot. Robotics-assisted language learning, for example, has demonstrated improvements in vocabulary retention and engagement, particularly among children with speech delays (Zviel-Girshin et al., 2024). Critics of parental resistance argue that rejecting AI wholesale risks depriving children of tools that may complement, rather than replace, human interaction. This tension underscores the need to distinguish between AI as augmentation and AI as substitution. Parents appear more willing to accept the former, predominantly when guided by educators, and highly resistant to the latter.

4.3. From Principles to Policy and Practice

Translating these findings into practice requires moving beyond broad platitudes. Three targeted implications emerge:

- **Transparency Mandates:** Regulators should require AI developers to provide plain-language data transparency statements tailored explicitly for parents. These statements should outline what data is collected, how it is used, and how parents can opt out.
- **Culturally Responsive Design:** AI systems for early learning should be co-designed with parental input to reflect local pedagogical traditions and ethical values. A play-based society may require different AI functionalities than an academically competitive one.
- **Parental Digital Literacy Programs:** Schools and community organisations should provide short, accessible workshops that train parents to critically evaluate AI tools, empowering them to act as informed mediators rather than passive recipients.

4.4. Reframing the Debate

Ultimately, parental attitudes toward AI in early childhood cannot be reduced to “support” or “resistance.” They are negotiated through the intersection of trust, cultural alignment, and literacy. By framing the issue through the three-pillar model, this paper advances the debate from describing concerns to offering a conceptual tool for analysing how and why those concerns arise. This framework also provides a basis for future empirical research to test how these dimensions interact longitudinally and across diverse sociocultural contexts.

Table 1 Comparative Matrix of Factors Shaping Parental Attitudes Toward AI in Early Childhood Education

Pillar	Positive Influences on Acceptance	Negative Influences on Resistance	Key Illustrative Studies
Trust	Apparent teacher oversight; transparent data practices; strong regulatory frameworks	Algorithmic opacity, lack of parental consent, and weak enforcement of data protection	Selwyn et al. (2023); Hasse & Bruhn Jensen (2022); Internet Matters (2023)
Cultural Values	Alignment with dominant educational philosophies (e.g., academic competitiveness in East Asia)	Conflict with child-centred or play-based pedagogies; moral concerns about AI as a socialising agent.	Lake (2023); Kampylis et al. (2021); Price (2023)
Digital Literacy	Parents able to evaluate AI risks and benefits; awareness of data practices; active mediation at home	Knowledge gaps; passive acceptance of AI tools; language barriers in minority households	Chaudron et al. (2021); Barna Group (2024); Livingstone & Helsper (2007)
Interplay	High trust + cultural alignment + digital literacy → conditional acceptance	Weakness in any one pillar → heightened scepticism or silent compliance	Synthesised across literature

4.5. Policy Recommendations

To ensure that recommendations are both actionable and globally relevant, they must be situated within established international frameworks. The UNESCO Guidance for AI in Education (2021) emphasises that AI integration should uphold principles of human rights, child-centred pedagogy, and inclusivity, while the OECD AI Principles (2019) call for transparency, fairness, accountability, and human-centric design. Aligning with these standards, the following policy recommendations emerge from the three-pillar framework developed in this study:

Transparency Mandates (Trust) - In line with OECD's call for accountability and transparency, governments should require AI developers to provide plain-language parental consent forms and ongoing disclosure of data collection and algorithmic functions. UNESCO (2021) stresses the need for AI tools in education to be subject to transparent governance to protect children's rights.

Culturally Responsive Design (Cultural Values) - UNESCO (2021) highlights that AI in education must respect local pedagogical traditions. Developers should co-design AI systems with parents and educators to ensure alignment with cultural values—whether that means prioritising play-based learning in Nordic countries or academic acceleration in East Asia.

Parental Digital Literacy Programs (Digital Literacy) - The OECD AI Principles urge inclusive capacity-building to prevent digital divides. National policies should fund parental digital literacy programs, offering accessible and multilingual training resources to empower parents as informed mediators. This directly addresses UNESCO's (2021) recommendation for equitable participation in the AI-driven education ecosystem.

Independent Auditing (Cross-Pillar Interplay) - Following OECD (2019) guidelines on accountability, independent auditing bodies should regularly evaluate AI tools for transparency, cultural responsiveness, and equity. UNESCO (2021) similarly advocates for monitoring mechanisms that ensure educational AI systems remain consistent with children's rights and societal values.

Table 2 Policy and Practice Recommendations for Ethical AI Integration in Early Childhood Education

Pillar	Policy-Level Recommendations	Practice-Level Recommendations
Trust	<ul style="list-style-type: none"> • Mandate plain-language parental consent forms for AI tools. • Enforce AI transparency rules under child-focused regulations (e.g., GDPR, AI Act). 	<ul style="list-style-type: none"> • Schools to provide regular parent briefings on how AI is used. • Require teachers to act as mediators between children and AI systems.
Cultural Values	<ul style="list-style-type: none"> • Support co-design of AI tools with parent and educator input to reflect local pedagogical traditions. • Adapt AI standards to respect play-based vs. academic-oriented curricula. 	<ul style="list-style-type: none"> • Encourage teachers to integrate AI activities that align with cultural values (e.g., collaborative play in Nordic contexts, structured tutoring in East Asia).
Digital Literacy	<ul style="list-style-type: none"> • Fund national digital parenting programs to improve critical AI literacy. • Provide multilingual resources to ensure accessibility for immigrant and minority families. 	<ul style="list-style-type: none"> • Offer school-based workshops for parents on AI evaluation and safe use. • Develop easy-to-read AI usage guides distributed through preschools.
Cross-Pillar Interplay	<ul style="list-style-type: none"> • Establish independent auditing bodies to evaluate AI tools for transparency, cultural responsiveness, and equity. • Require periodic reviews of child data handling practices. 	<ul style="list-style-type: none"> • Encourage ongoing parent-teacher-developer forums to ensure continuous feedback and trust building. • Provide parents with opt-out mechanisms without penalising children's learning.

5. Conclusion

This review demonstrates that parental attitudes toward AI in early childhood education are best understood through the intersection of trust, cultural values, and digital literacy. Parents are neither uniformly enthusiastic nor wholly resistant; their evaluations depend on the transparency of AI systems, the extent to which these tools align with local pedagogical norms, and their own ability to critically interpret risks and benefits. The proposed three-pillar framework clarifies how these dimensions interact, offering a more precise lens than previous studies that treated parental concerns as fragmented or incidental.

While the review draws on existing empirical and policy studies, its novelty lies in synthesising findings into a structured conceptual framework. By moving beyond description to analysis, it positions parental trust, cultural context, and digital

literacy as interdependent variables rather than isolated concerns. This framework provides a basis for future empirical testing and comparative studies, and for developing culturally responsive AI policies in early learning.

5.1. Limitations

Three key limitations should be acknowledged. First, despite efforts to include diverse sources, the literature remains disproportionately weighted toward Western and high-income contexts, leaving the perspectives of parents in the Global South underrepresented. Second, the review draws on a mix of peer-reviewed research and authoritative reports, which, while necessary given the emerging field, introduces reliance on grey literature. Third, the narrative approach, while enabling thematic depth, lacks the replicable rigour of systematic review methods and does not provide quantitative synthesis. These constraints highlight the need for future longitudinal and mixed-methods research.

5.2. Future Directions

Future studies should investigate how parental attitudes evolve over time as children engage with AI tools, with particular attention to underrepresented regions and minority-language households. Mixed-methods research that combines large-scale surveys with qualitative interviews could illuminate the nuanced ways parents negotiate transparency, cultural alignment, and literacy challenges. Additionally, co-design initiatives involving parents, educators, and developers could yield AI tools that are developmentally appropriate, ethically sound, and socially trusted.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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