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Exploring Parents' Perceptions of Technology in Early Childhood Education

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ABSTRACT

This qualitative study investigates the perceptions of Sidama parents in southern Ethiopia regarding the integration of technology in early childhood education (ECE). Despite global advancements in educational technology, its application in culturally distinct, low-resource contexts like the Sidama region remains under-explored. Through semi-structured interviews with 30 parents (12 female, 18 male), this research employed thematic analysis to identify key themes. Findings reveal a complex interplay of acceptance and apprehension, shaped by cultural preservation, socioeconomic status, and access to digital resources. Parents acknowledged potential benefits for learning and digital literacy but expressed strong concerns about excessive screen time, the erosion of cultural traditions, and the digital divide. The study underscores the critical need for a culturally responsive approach to technology integration in ECE that respects indigenous knowledge systems and addresses equity issues. This research contributes to global dialogues by highlighting the unique socio-cultural factors that influence technology adoption in non-Western, low-income communities and offers practical recommendations for policymakers and educators working in similar contexts.

Keywords: early childhood education, technology integration, parental perceptions, cultural responsiveness, digital divide, qualitative research

INTRODUCTION

Early childhood education (ECE) is universally recognized as a foundational pillar for lifelong learning, shaping cognitive, social, emotional, and physical development (Pianta et al., 2009; Dakamo, 2023). In the 21st century, digital technology has become a pervasive force in educational landscapes, offering innovative tools to enhance learning experiences (Bakken et al., 2017). The potential benefits in ECE are significant, including interactive learning, personalized instruction, and the development of digital literacy skills (Donohue, 2015).

However, the integration of technology in ECE is not without debate. Scholars and practitioners contend with concerns about excessive screen time, the displacement of hands-on, experiential learning, and the exacerbation of socioeconomic disparities often termed the digital divide (Blackwell et al., 2014; Chaudron et al., 2018). Furthermore, the perceived value and appropriateness of technology are not universal; they are

deeply embedded within cultural contexts (Fox-Turnbull, 2019; Stephen & Edwards, 2018). What is considered an innovative tool in one cultural setting may be viewed as a threat to traditional values and pedagogies in another.

Much of the existing literature on technology in ECE reflects perspectives from high-income, Western countries (Otterborn et al., 2019). There is a pronounced research gap concerning how parents in indigenous, low-resource communities perceive the role of technology in their young children's education. Understanding these perspectives is crucial, as parents are primary mediators of children's technology use and their attitudes significantly influence its adoption and effectiveness (McCloskey et al., 2018; Nikken & Schols, 2015).

This study seeks to address this gap by focusing on the Sidama people of southern Ethiopia. The Sidama possess a rich cultural heritage with strong oral traditions and community-based learning practices (Tomora & Jirata, 2025). The rapid, albeit uneven, penetration of technology into this region creates a unique intersection of modernity and tradition. Therefore, this article is guided by the following questions:

- How do parents perceive the role and integration of technology in their children's early childhood education?
- How are these perceptions shaped by cultural values and socioeconomic factors?

By examining the attitudes, concerns, and aspirations of Sidama parents, this study aims to contribute a critical, non-Western perspective to the global discourse on technology in ECE. The findings inform the development of culturally sensitive and equitable strategies for technology integration that are respectful of local values and sustainable within low-resource contexts.

Literature Review

Technology in ECE: A Contested Terrain

Research on technology in ECE reveals a field characterized by both optimism and caution. Proponents argue that well-designed technology can enhance learning by providing interactive, engaging, and differentiated instruction (Papadakis et al., 2018; Wang et al., 2010). Digital storytelling, educational apps, and multimedia resources can cater to diverse learning styles and foster creativity and problem-solving skills (Yelland, 2018).

Conversely, a significant body of literature urges caution. Primary concerns revolve around the impact of excessive screen time on physical activity, sleep patterns, and attentional capacities (Reid Chassiakos et al., 2016). Others warn that technology could displace essential hands-on and social play experiences, which are crucial for developing empathy, emotional regulation, and motor skills (Cordes & Miller, 2000; Plowman & McPake, 2013). The American Academy of Pediatrics (2016) issued guidelines recommending limits on screen time for young children, reflecting these widespread concerns.

The Socio-Cultural Dimension of Technology Adoption

The adoption of educational technology is not a culturally neutral process (Stephen & Edwards, 2018). Cultural values and beliefs fundamentally shape how technology is perceived, accepted, and utilized. Fox-Turnbull (2019) emphasizes that technology integration must be culturally responsive, meaning it should connect to the learners' cultural backgrounds and experiences. In many non-Western contexts, a tension exists between embracing globalized digital tools and preserving local linguistic and cultural traditions (Elango et al., 2015). For indigenous communities, technology can be a double-edged sword: a potential tool for cultural preservation and language revitalization through digital archives and apps, but also a potential agent of cultural homogenization and erosion (Garcia, 2019).

Parental Mediation and the Digital Divide

Parents play a pivotal role as "media mediators" in their children's digital lives (Nikken & Schols, 2015). Their attitudes ranging from enthusiastic endorsement to restrictive skepticism directly influence the quantity and quality of children's technology use (McCloskey et al., 2018). Parental mediation strategies include active co-use, supervision, and the establishment of rules and limits (Livingstone et al., 2017).

These practices face additional obstacles due to the multifaceted nature of the digital divide. According to Van Dijk (2020), this divide includes not just inadequate access to technology and connectivity, but also inequalities in digital skills, a shortage of culturally and linguistically appropriate content, and a lack of freedom to use digital tools proficiently. In low-resource settings like rural Ethiopia, this divide is acute. While some urban, affluent families may have access to high-speed internet and a range of devices, rural and low-income families often face significant barriers, making equitable technology integration a profound challenge (Chaudron et al., 2018). Previous studies have often focused on parental perceptions in high-income countries, leaving a critical gap in understanding how these dynamics play out in communities like the Sidama, where cultural preservation and socioeconomic constraints are paramount concerns.

Methodology

Research Design

This study employed a qualitative research design with a phenomenological approach to gain an in-depth understanding of the lived experiences and perceptions of Sidama parents regarding technology use in ECE. This approach was deemed appropriate for exploring complex, nuanced attitudes and the underlying cultural and social factors that shape them.

Participants and Sampling

A purposive sampling technique was used to recruit 30 parents (12 female, 18 male) from the Sidama Region in the southern part of Ethiopia. Participants were selected based on the following criteria: (1) being an ethnic Sidama parent, (2) having at least one child between the ages of 3 and 6 enrolled in a pre-primary or early childhood care center, and (3) possessing varying levels of exposure to digital technology (from none to regular use). Thus, the study engaged a purposively diverse group of Sidama parents who varied in gender, socioeconomic status, and familiarity with technology, ensuring a rich and representative range of perspectives on the research topic. This strategy ensured the inclusion of a diverse range of perspectives across socioeconomic backgrounds, from subsistence farmers to small business owners and local civil servants. Recruitment continued until data saturation was achieved, whereby subsequent interviews yielded no new thematic information.

Data Collection

Data were collected through semi-structured, in-depth interviews conducted between February and June 2023. An interview protocol was developed in English, translated into *Sidamu Afoo*, and then back-translated to ensure conceptual accuracy and cultural appropriateness. The tool was validated by elders and the language experts before administration. The protocol included open-ended questions and probes designed to explore:

Parents' general understanding and use of technology.

Perceptions of the potential benefits and risks of technology for young children.

Views on the role of technology in formal education versus home learning.

Concerns regarding screen time, content, and cultural preservation.

The influence of socioeconomic factors on access and attitudes.

Prior to each interview, informed consent was obtained verbally and in writing (using *Sidamu Afoo*), with assurances of confidentiality, anonymity, and the right to withdraw. Interviews were conducted in private settings chosen by the participants (often their homes or a quiet community space), lasted between 45-70 minutes, and were audio-recorded with permission. Detailed field notes were taken to capture contextual observations and non-verbal cues.

Data Analysis

The data analysis followed Braun and Clarke's (2006) six-phase framework for thematic analysis:

Familiarization: All audio recordings were transcribed verbatim in *Sidamu Afoo* and then translated into English. The researcher repeatedly read the transcripts while listening to the recordings to ensure accuracy and immerse in the data.

Generating Initial Codes: Significant statements and phrases relevant to the research question were systematically coded using NVivo 12 software. An initial codebook was developed.

Searching for Themes: The codes were collated and grouped into potential themes and sub-themes that captured patterns of meaning across the dataset.

Reviewing Themes: The potential themes were checked against the coded extracts and the entire dataset to ensure they formed a coherent pattern and accurately reflected the meanings evident in the data. Themes were refined, split, or combined as necessary.

Defining and Naming Themes: Each theme was clearly defined and given a descriptive name that captured its essence.

Producing the Report: The analysis was woven into a narrative report, supported by compelling, anonymized excerpts from the transcripts to illustrate the findings.

To enhance trustworthiness, peer debriefing was conducted with two colleagues familiar with qualitative research, and member checking was performed by sharing a summary of findings with a subset of participants to confirm the accuracy of the interpretations.

Results

Thematic analysis revealed four central themes that capture the complex perceptions of Sidama parents regarding technology in ECE: (1) Cautious Acceptance and Conditional Benefits, (2) The Primacy of Cultural Preservation, (3) The Overarching Shadow of the Digital Divide, and (4) Parental Responsibility in Mediation.

Theme 1: Cautious Acceptance and Conditional Benefits

Parents recognized potential benefits of technology but consistently framed their acceptance with conditions. They saw value in technology as a supplementary educational tool, particularly for acquiring new languages and knowledge about the world.

Sub-theme: Educational Enhancement: Several parents, particularly those with higher education levels, viewed technology as a modern resource that could aid learning.

> *"If it is used for learning letters, numbers, or seeing pictures of animals we don't have here, it is good for their mind. It can open their eyes." (P14, Male, Urban).*

This statement reflects a conditional acceptance of technology, valuing its potential as a supplementary educational tool that can expand a child's knowledge and worldview, provided its content is relevant and enriching.

Sub-theme: Fear of Displacement: A more prevalent concern was that technology would displace essential, traditional forms of learning. The value of hands-on experience and human interaction was repeatedly emphasized.

> *"A child learns respect by being with elders, by helping me pound Weese (false banana). What can a machine teach them about that? It can show a picture, but it cannot teach the feeling." (P07, Female, Rural).*

This statement asserts the primacy of embodied, culturally-grounded learning through social interaction and practice, arguing that technology is an inadequate substitute for the transmission of core cultural values and lived experience.

Theme 2: The Primacy of Cultural Preservation

This was the most salient theme. Parents expressed a strong desire for any technological integration to affirm, rather than undermine, Sidama cultural identity. The fear of cultural erosion was a powerful deterrent to unqualified acceptance.

Sub-theme: Language and Content Concerns: Parents were worried about the dominance of English and Amharic in digital content, fearing it would marginalize the Sidamu Afoo language.

> *"Most videos are in English. If the child is always watching that, he will prefer it and forget our own language. Our stories and songs will be forgotten." (P22, Female, Semi-urban).*

This statement expresses a deep concern that technology, through linguistic dominance, acts as an agent of cultural erosion, threatening the intergenerational transmission of indigenous language and oral traditions.

Sub-theme: Technology as a Cultural Tool: A minority of parents envisioned a positive role for technology if it were harnessed to preserve culture.

> *"Maybe if they could make a tablet with our Sidama stories, with our music, with the history of our Fiche festival... then it would be good. It would help us keep our culture strong for them." (P05, Male, Urban).*

This statement presents a vision of technology as a tool for cultural preservation, suggesting that its value and acceptance are contingent on its ability to affirm and strengthen, rather than erode, local identity and heritage.

Theme 3: The Overarching Shadow of the Digital Divide

Socioeconomic status profoundly shaped perceptions, primarily through the tangible barrier of access. The digital divide was not an abstract concept but a daily reality that dictated possibilities and concerns.

Sub-theme: Access as a Privilege: Parents from lower-income backgrounds often expressed a sense of resignation.

> *"How can I talk about this? It is for town people, for those with money. We don't have light (electricity) constantly, how can we have a computer?" (P19, Male, Rural).*

This statement poignantly captures the experience of the material and infrastructural digital divide, where a lack of basic resources like reliable electricity excludes entire communities from the conversation about technology, rendering it a privilege of the urban and affluent.

Sub-theme: Equity as a Precondition: Many parents, even those with limited access, argued that if technology is to be part of education, the government must ensure all children can benefit equally.

> *"If the school wants to use it, they must provide it for every child. It cannot be that only some children get this advantage. That will make the difference between rich and poor even bigger." (P11, Female, Semi-urban).*

This statement articulates a fundamental demand for equitable access, emphasizing that school-led technology integration must be universally provided to prevent the exacerbation of existing socioeconomic disparities.

Theme 4: Parental Responsibility in Mediation

Across all socioeconomic groups, parents emphasized their fundamental role in guiding and controlling their children's technology use. They saw themselves as the essential filter between the child and the digital world.

Sub-theme: Active Mediation and Rule-Setting: Parents described strategies like co-viewing, setting strict time limits, and selecting content.

> *"I only let him watch for 30 minutes after he finishes his chores. And I sit with him to see what he is watching. I will not just leave him alone with it." (P03, Female, Urban).*

The quotation above exemplifies a parental mediation strategy combining rule setting (restrictive mediation) through time limits and active co-use (instructive mediation) to monitor content and guide the child's technology experience.

Sub-theme: The Challenge of Digital Literacy: Some parents expressed anxiety about their own inability to navigate digital environments, which limited their capacity to mediate effectively.

> *"These things are new to us also. How can I guide him if I don't understand it myself? I am afraid he will see something bad and I won't even know." (P27, Male, Rural).*

This statement highlights a critical barrier to effective parental mediation: the parent's own limited digital literacy, which creates anxiety and undermines their confidence and ability to protect and guide their child in digital environments.

Discussion

This study provides a nuanced understanding of how Sidama parents navigate the complex interplay of educational potential, cultural preservation, and socioeconomic reality in their perceptions of technology in ECE. The findings both align with and extend the existing international literature, offering critical points of comparison with other non-Western and indigenous contexts.

The theme of Cautious Acceptance mirrors the global ambivalence identified by scholars like Plowman and McPake (2013). However, the conditional nature of this acceptance predicated on technology not displacing culturally vital, hands-on learning resonates strongly with findings from other indigenous communities. For

instance, research among Maori whānau (families) in Aotearoa/New Zealand highlights a similar emphasis on technology serving to enhance, rather than replace, 'mahi-a-ringa' (handwork) and intergenerational knowledge transfer (Fox-Turnbull, 2019). This stands in contrast to some urban, middle-class contexts in countries like India, where parental anxiety often focuses more on academic competitiveness and less on the displacement of specific traditional practices (Manisha & Scotchmer, 2018). The Sidama parents' conditions thus challenge the Western-centric assumption of seamless integration and underscore Stephen and Edwards' (2018) argument for a culturally grounded understanding of technology adoption.

The overpowering concern for Cultural Preservation, particularly linguistic erosion, is this study's most significant contribution. This fear finds a powerful echo in studies from Native American communities, where the dominance of English in media is similarly viewed as a direct threat to Native language revitalization efforts (Garcia, 2019). However, the Sidama case adds a critical dimension by highlighting the intra-national linguistic hierarchy, where not only global languages like English but also national languages like Amharic are perceived as marginalizing local tongues. The parents' insight that technology could be repurposed as a tool for cultural preservation aligns with promising initiatives globally, such as the use of digital storytelling apps to sustain Aboriginal languages in Australia (Kral & Schwab, 2012) or the development of Quechua-language educational software in Peru. This finding confirms that for indigenous communities, the value of technology is intrinsically linked to its ability to affirm, rather than threaten, local identity.

The palpable reality of the Digital Divide experienced by Sidama parents provides a stark, on-the-ground validation of Van Dijk's (2020) model. The infrastructural barriers, such as the lack of reliable electricity, are not unique but are indicative of a common reality across rural Africa and other low-income regions. Studies in rural Rwanda and Kenya similarly identify electricity and connectivity as the primary gatekeepers of technology access, far preceding concerns about content or pedagogy (Chaudron et al., 2018). This shared experience across the Global South highlights that in low-resource settings, philosophical debates about technology's benefits are a luxury that follows the fundamental, material issue of equitable access. It underscores the argument that global EdTech debates must be contextualized within local infrastructural realities to avoid promoting further inequality.

Finally, the emphasis on Parental Responsibility and the associated anxiety due to limited digital literacy aligns with Nikken and Schols' (2015) research. Yet, this "second-level digital divide" in parental skills is a particularly acute challenge in rapidly digitizing societies with low adult literacy rates. This dynamic has been observed in rural Bangladesh and Cambodia, where parents' lack of familiarity with technology creates a significant barrier to effective mediation, often leading to either complete restriction or unguided use (Livingstone et al., 2017). This suggests that interventions aimed at promoting healthy technology use in such contexts must be twofold: educating children and, just as critically, empowering parents with the foundational digital skills and confidence needed to guide their children effectively.

By placing these findings in dialogue with research from other non-Western and indigenous communities, this study moves beyond a singular case to contribute to a growing body of evidence that demands a radical rethinking of educational technology paradigms. It demonstrates that the core tensions observed in Sidama—between modernity and tradition, equity and access, and mediation and illiteracy—are not isolated but are central to the experience of technologically peripheral communities worldwide.

Conclusion

This study set out to explore the perceptions of Sidama parents regarding technology in ECE, a perspective largely absent from the dominant literature. The findings reveal that their views are not simply a binary of acceptance or rejection but a sophisticated calculus weighing educational opportunity against cultural integrity and pragmatic access.

The study concludes that for technology integration to be successful, sustainable, and equitable in a context like the Sidama region, it must be:

Culturally Responsive: Developed in partnership with communities to create and curate content that reflects and reinforces local language, values, and traditions.

Equitably Accessible: Supported by policy and infrastructure investments that first bridge the digital divide, ensuring that technology does not become a new vector of inequality.

Parentally Supported: Accompanied by digital literacy programs for parents, enabling them to become confident and capable mediators of their children's digital experiences.

The findings challenge a one-size-fits-all approach to educational technology and advocate for hyper-localized, culturally-grounded models. This research contributes a vital non-Western case study to the global field, emphasizing that the future of technology in ECE must be pluralistic, respecting the diverse values and realities of communities worldwide.

Future Directions for Research

Co-Design Projects: Action research that collaborates with Sidama community members to co-design and pilot culturally relevant digital learning tools.

Longitudinal Studies: Research tracking the actual impact of culturally responsive technology integration on both educational outcomes and cultural identity markers among Sidama children.

Comparative Studies: Similar research conducted with other ethnic groups in Ethiopia and across East Africa to build a broader understanding of cultural perceptions.

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