

Unpacking digital childhoods: intersectional complexities of digitalisation in early childhood education

Fatma Büşra Aksoy-Kumr

Sabina Savadova

Marlies Kustatscher

Andrew Manches

Digital technologies are ubiquitous in the lives of most children, especially in the Global North. Children start interacting with these technologies very early in their lives, and their digital footprint often starts before birth (Green et al., 2024). Growing up in the digital age directly and indirectly impacts experiences of childhood, entangled between online and offline worlds (Save the Children, 2025; OECD, 2023; Kidron & Rudkin, 2023; Plowman, 2019).

Digital childhoods

Childhood studies have long grappled with the complexities brought about by economic, social, political, and ecological changes and uncertainties affecting children's lives (Canosa & Graham, 2020; Qvortrup et al., 2009; James et al., 1998). Contemporary childhoods are shaped by technology-driven and datafied dimensions, adding new layers to an already complex concept (Laursen & Jensen, 2025; Lingard, 2025). These digital childhoods encompass a wide range of social, cultural, and contextual factors that both influence and are influenced by an evolving socio-digital landscape.

The emergence of digital technologies has been characterised by a lack of active involvement of children themselves. Many

digital technologies have not been initially designed for and with children, creating constraints and concerns about their use and application (Livingstone et al., 2024). Younger children especially tend to be marginalised from digital debates and developments due to persistent and deep-seated assumptions regarding their 'vulnerability' and 'incapabilities' (Livingstone et al., 2024). Children's perspectives on the evolving landscape of early childhood education amidst digital advancements are frequently overlooked, highlighting a significant gap in conceptual, practical and policy discourses that "acknowledge children's varying experiences with digital technology" (Undheim, 2022, p. 485).

Digitalisation and datafication in early childhood education

Early childhood education is currently grappling with a multitude of intricate challenges, particularly within the context of prevailing global uncertainties (Pascal & Bertram, 2023). These complexities encompass a range of issues, including disparities in access to quality education, the need for adaptive pedagogies in response to increasing child well-being issues, and the broader socio-economic and political upheavals that influence

educational policies and practices during these ambivalent times (UNICEF, 2025; Pascal & Bertram, 2023). Ethical and rights-based concerns about the integration of existing and emerging technologies into early childhood education have become prominent in discussions, and current debates are centred on how to responsibly incorporate technological advancements within pedagogical experiences, particularly in response to rapid innovation in the contemporary digital era (Livingstone et al., 2024; Green et al., 2024; Danby et al., 2018).

Early childhood education is often considered an area of early intervention and investment (Roberts-Holmes & Moss, 2021), and discourses on quality, tracking and monitoring permeate the field (Urban, 2019). Such outcome-oriented and economically driven perspectives can be a driving factor in the integration of digital environments into early childhood education contexts, sometimes without much questioning of their overarching impacts. Digital technologies have become embedded and increasingly mainstreamed in early childhood education (e.g., learning apps, smart or connected toys, child-tracking systems, digital documentation, etc.) (Toivonen, 2024; Kewalramani et al., 2020).

Transnational actors have contributed to increased resource allocations in early childhood education contexts, often involving the prioritisation of digital infrastructure within these contexts (Sriprakash et al., 2024; Davies et al., 2022). Some researchers, on the other hand, have pointed out the insufficient investment in early childhood professional preparation programs and a lack of ongoing, sustainable support for educators in the context of increasing digitalisation (Formosinho et al., 2024). This results in limited contextual insights into children's and practitioners' use of and

perspectives on integrating digital environments into early childhood education contexts (Danby et al., 2018). Globally, the increasing privatisation of early childhood education, combined with the exponential growth of an EdTech industry, has attracted extensive investment and capital over the years (Sriprakash et al., 2024; Davies et al., 2022). In line with this, the datafication of children's learning, monitoring and assessment has become more widespread to promote 'accountability' and 'quality' (Kucirkova, 2019).

Intersectional perspectives on the digitalisation of early childhood education

Far from forming a mere backdrop to early childhood education, digital technologies actively shape how young children experience it (Lingard, 2025). The experiences of digital technologies are mediated by intersectional dimensions with the potential to both exacerbate or address age-based, gendered, racialised, socio-economic, ableist and other inequalities. The concept of intersectionality is rooted in a long tradition of activism and scholarship of women of colour (Hill Collins and Bilge, 2016; Crenshaw, 1989; Combahee River Collective, 1977). Intersectional perspectives recognise that structural inequalities cannot be reduced to single axes of oppression, but pay attention to how aspects like age, gender, race, socio-economic backgrounds, disability and more interact.

Within childhood studies, intersectionality has been widely utilised over the last years (von Benzon and Wilkinson, 2019; special issue edited by Konstantoni et al., 2017; O'Neill Gutierrez and Hopkins, 2015), but studies vary in how seriously they consider intersectionality's feminist and anti-racist politics. Intersectional childhood studies

recognise how children's lived experiences are not just shaped by their age and status as children, but are also heavily racialised, gendered, classed and so on. Operationalising intersectionality means considering which children are included or excluded in mainstream research, policy and practice, and focusing on how gender, race (including whiteness), class and other categories intersect to shape children's lives (Kustatscher and Konstantoni, 2023).

When focusing on digital childhoods in early childhood education, an intersectional lens can make visible and analyse how digitalisation can exacerbate or address intersections of age-based, gendered, racialised, socio-economic, ableist and other inequalities. This may include, for example, a focus on how access to digital technologies – and resulting educational opportunities – is shaped by children's intersectional positions (e.g. captured in research on the 'digital divide') (Berson et al., 2022). It may also include attention to how digital technologies – such as digitised games or AI tools – contribute to shaping normative images of childhood, and may be programmed to exclude or misrepresent children who do not fit white, middle-class norms, or reinforce racist and gendered stereotypes (Baker and Hawn, 2022; Souto-Manning, 2022). In early childhood education, there has also been an increasing focus on how digitised learning documentation and assessments are informed by assumed universal developmental 'milestones' and can reify stereotypes and prejudice against particular groups of children who do not meet these normative outcomes (Paananen et al., 2024). Further, these techniques of datafication have been shown to direct practitioners to prioritise managerial over pedagogical and relational aspects of their work (Bradbury and Robert-Holmes, 2016). Finally, there are concerns about the increasing influence of tech companies –

whose profit-oriented practices can be in direct opposition to intersectional justice struggles – in shaping educational policy and practice, whilst expanding children and families' digital surveillance (Paananen et al., 2024; Bradbury and Robert-Holmes, 2017).

There remains a need for further research that systematically addresses how intersections of age, race, gender, class, disability and more come to shape the lived experiences and structural dis/advantages of particular groups of children (and practitioners) within the digitalised aspects of early childhood educational spaces. This themed section begins to unpack some of these issues. For example, Noor and Henward, drawing on ethnographic research with middle-class mother-child dyads in Islamabad, explore children's digital play as a site where class, gender, religion, and coloniality meet in contemporary Pakistani childhoods. They discuss the unresolved ambivalence of mothers' mediation of children's digital engagement, which needs to balance English-language learning, classed reproduction and cultural capital, colonial legacies, and assumptions about the risks and advantages of children's use of digital technologies.

Richardson and colleagues analyse how video surveillance technologies are experienced by practitioners in Canadian ECE centres. Drawing on feminist care ethics (Tronto, 2013) and ethics of (in)security (Taylor, 2023), they show how video surveillance legitimizes and perpetuates a culture of distrust between educators and families, how practitioners internalise the experienced surveillance in order to uphold flat notions of 'good' ECE practice, and how this video surveillance disproportionately affects racialized practitioners through heightened scrutiny and

reduced capacity to resist or question surveillance practices.

Considering the intersectional dimensions of digitalisation in early childhood education will enable researchers, practitioners and policymakers to examine critically how digitalisation improves or worsens the lives of different groups of children or does both at once. More research on the perspectives of diverse groups of young children themselves can further support children's agency and the realisation of their human rights in these processes.

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