

Investigating the Power of Personalized Digital Experiences for Children

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Center for Children and Technology | Education Development Center

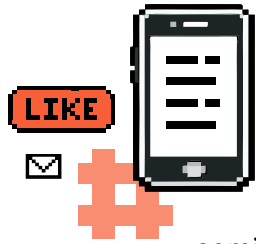
July 2026



Executive Summary

Personalization shapes many of the digital experiences that children and families encounter every day—through search results and video recommendations, social media feeds and educational tools and platforms, algorithmic systems influence what content children see, how it is presented, and what they are encouraged to do next. Policymakers, educators, and families lack understanding about how personalized digital systems work. Moreover, the effects of these systems on children’s learning and well-being are not well understood.

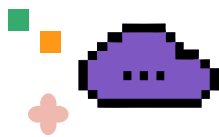
Policy attention to personalization is increasing rapidly. Governments are introducing new legislation and regulations to reduce risks associated with children’s digital media use, including exposure to inappropriate content, excessive engagement, and data privacy concerns. These efforts often respond to concerns about harm but give limited attention to how designers can use personalization to support children’s learning, exploration, connection, and well-being, and how to incentivize and ensure systems do so. Although most people recognize that platforms use data for personalization, far fewer understand how developers train algorithms, make decisions, or update these systems over time and whether and how this matters for children. A stronger understanding of how personalization shapes children’s experiences as well as its benefits and risks can inform more effective policy and design approaches.



Study Methods

This study addresses this gap by exploring how personalization shapes digital experiences and outcomes for children ages 9–17 and identifying implications for policy and design that better align with children’s learning and well-being. We draw from the research evidence as well as through semi-structured interviews with 30 experts across 14 countries and a range of domains, including child development, communications, human-computer interaction, law, and policy. This study explores the following research questions:

1. How do current approaches to personalization shape children’s experiences and engagement with content?
2. In what ways do personalized digital experiences enhance or detract from children’s learning and well-being?
3. To what extent and how does personalization ensure safety while also supporting privacy, agency, and equity?
4. How can educators, parents/caregivers, and developers scaffold children's interactions with personalized digital content?



Key Findings

Children engage with digital platforms for many reasons, including seeking information, entertainment, relaxation, exploration, and social interaction. Across these different motivations and contexts, personalization shapes children’s digital experiences. It influences behavior by shaping attention and time use, affects emotions and engagement by reinforcing enjoyment and a sense of validation, and structures learning by guiding pathways and exposure to content and ideas. Personalization can make digital environments more navigable, engaging, and responsive to children’s needs. However, it can also contribute to challenges, such as narrowing exposure to information, creating echo chambers or reinforcing existing preferences, and encouraging passive use.

Effects of Personalization on Learning and Well-being Are Mixed

Personalization in digital environments can affect children’s learning and development in several ways. It can increase engagement by making content more relevant to children’s interests and prior knowledge. It can provide adaptive scaffolding and feedback that supports skill development. It can also support creativity and self-expression when it positions children as active participants, enabling them to create, contribute, and see themselves as authors, which can strengthen identity development, voice, and a sense of contribution.

However, across studies and expert perspectives, the effects of personalization on learning and well-being are mixed. Benefits are evident but not consistent, and they depend on how systems are designed, the context in which they are used, and the type of content they prioritize, rather than on the use of personalization approaches alone. In addition to platform design, youths' experiences are also influenced by individual characteristics, including age, developmental stage, gender, cultural background, caregiver support, and digital literacy.

Personalization has the potential to support equity by increasing access to relevant content and helping children find communities and resources that reflect their identities and needs. However, it can also reinforce inequities through biased algorithms, unequal access to technology, and differences in digital literacy and adult support. Although there is optimism around personalization's potential to support equity, effects remain uneven. Children's agency in personalized digital environments is contingent upon agency-supportive design and their own individual skills.

Personalization can offer protective mechanisms designed to align content with children's age or developmental stage. However, children have varied and often limited understanding of digital and algorithmic literacy, which can make them more susceptible to undue influences on digital platforms. Data privacy also emerged as a key cross-cutting tension. While personalization relies on data to provide relevant and adaptive experiences, limited transparency and understanding constrain children's ability to influence how their data are used, highlighting the need to balance privacy, agency, and meaningful personalization.

Design Shapes Outcomes More Than Personalization Itself

A central finding of this study is that the effects of personalization depend on how systems are designed and what goals they prioritize. Systems designed to maximize engagement often prioritize attention and time spent, which can lead to passive use and narrow content exposure. In contrast, systems designed with children's developmental needs in mind can support active engagement, learning, and exploration. Key design tensions include balancing relevance with diversity, efficiency with effort and productive struggle, system automation with user agency, personalization based on past behavior versus accounting for children's evolving needs and contexts, and supporting openness and discovery while also ensuring safety and age-appropriate experiences.

Removing Personalization Introduces New Trade-Offs

Efforts to limit or remove personalization do not eliminate challenges. Instead, they shift them. Without personalization, children may need to exert more effort to find relevant information in

ways that enhance learning opportunities, but they may also experience less engaging or meaningful content, and non-personalized systems do not necessarily ensure greater diversity or safety. These findings suggest that the key issue is not whether personalization should exist, but how it should be designed to support meaningful and developmentally appropriate experiences.

Recommendations



We offer some recommendations for policymakers and tech designers to help create a more balanced approach to personalization in digital systems. We encourage policymakers to move beyond risk mitigation toward child-centered design, operationalize standards and strengthen accountability, address structural incentives that deprioritize children’s well-being, and ensure cross-cutting supports, including collaboration with industry and broad investment in digital literacy education. We encourage tech developers to design for children from the start rather than apply patchwork remedies later, enhance agency and transparency, align their designs with child development, involve parents and caregivers in their children’s digital experiences, and balance relevance with broader social goals.

A child-centered approach grounded in children’s development and well-being offers a path forward—not by eliminating personalization but by reshaping what it is for, how it works, and who it serves.

Acknowledgments

This report was funded by Google and conducted by the Center for Children and Technology at Education Development Center. We are grateful to the 30 experts who generously shared their time and perspectives through interviews.

Suggested citation:

Silander, M., Hunt, E., Relkin, E., Sun, M., Lewis-Presser, A., Kaiser, A., & Hupert, N. (2026). *Investigating the power of personalized digital experiences for children*. Education Development Center.

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Table of Contents

Executive Summary	i
Study Methods	ii
Key Findings	ii
Effects of Personalization on Learning and Well-being Are Mixed	ii
Design Shapes Outcomes More Than Personalization Itself	iii
Removing Personalization Introduces New Trade-Offs	iii
Recommendations	iv
Introduction	1
Methods	3
Participants	4
Data Collection and Procedures	5
Analysis	5
Findings	5
How Children Experience and Engage with Personalization	6
Forms and Mechanisms of Personalization	7
Children’s Digital Engagement Across Platforms	8
How Personalization Shapes Children’s Engagement	10
Digital Engagement in the Absence of Personalization	14
Children’s Understanding of Personalization	16
Developmental and Individual Differences in How Children Experience Personalization ..	18
Effects of Personalization	20
Positive Effects on Learning and Well-Being	21
Negative Effects on Learning and Well-Being	23
Personalization and Safety, Privacy, Agency, and Equity	24
Personalization to Enhance Safety	24
Personalization and Equity	26
Personalization and Agency	28

Personalization and Data Privacy	29
Role of Parents, Caregivers and Educators	30
Implications for Policy and Design	31
Policy Recommendations	32
Recommendations for Design.....	39
Conclusion	42
References.....	45
Appendix.....	61
List of Participants	61

Introduction

Many of the digital experiences children ages 9–17 encounter every day are shaped by personalization. Personalization can shape what children see during digital experiences through three main pathways: (1) use of individual data and aggregated behavioral data, (2) the rules platforms use to shape what appears in a user’s feed, and (3) how algorithms are trained to make recommendations. Although personalization is ubiquitous, stakeholders lack knowledge about how these systems influence young people’s learning and well-being. This gap in understanding has important implications for policy. In particular, policymakers, families, and other stakeholders tend to hold limited understanding of how personalized recommendations work in practice beyond a basic understanding of data use and privacy.



The need to improve public understanding about how personalization works and, in particular, clarify the benefits and risks of personalized digital experiences is especially critical as concerns grow about children’s digital media use, the rapid advances in artificial intelligence (AI), and the increasing role of algorithms in shaping what children see online. Governments around the world are introducing new policies, regulations, and design standards to limit personalization of children’s digital experiences. Current approaches tend to focus on mitigating harm, often emphasizing restrictions such as age-based limits or the reduction of data use. However, although these efforts address important risks, they often

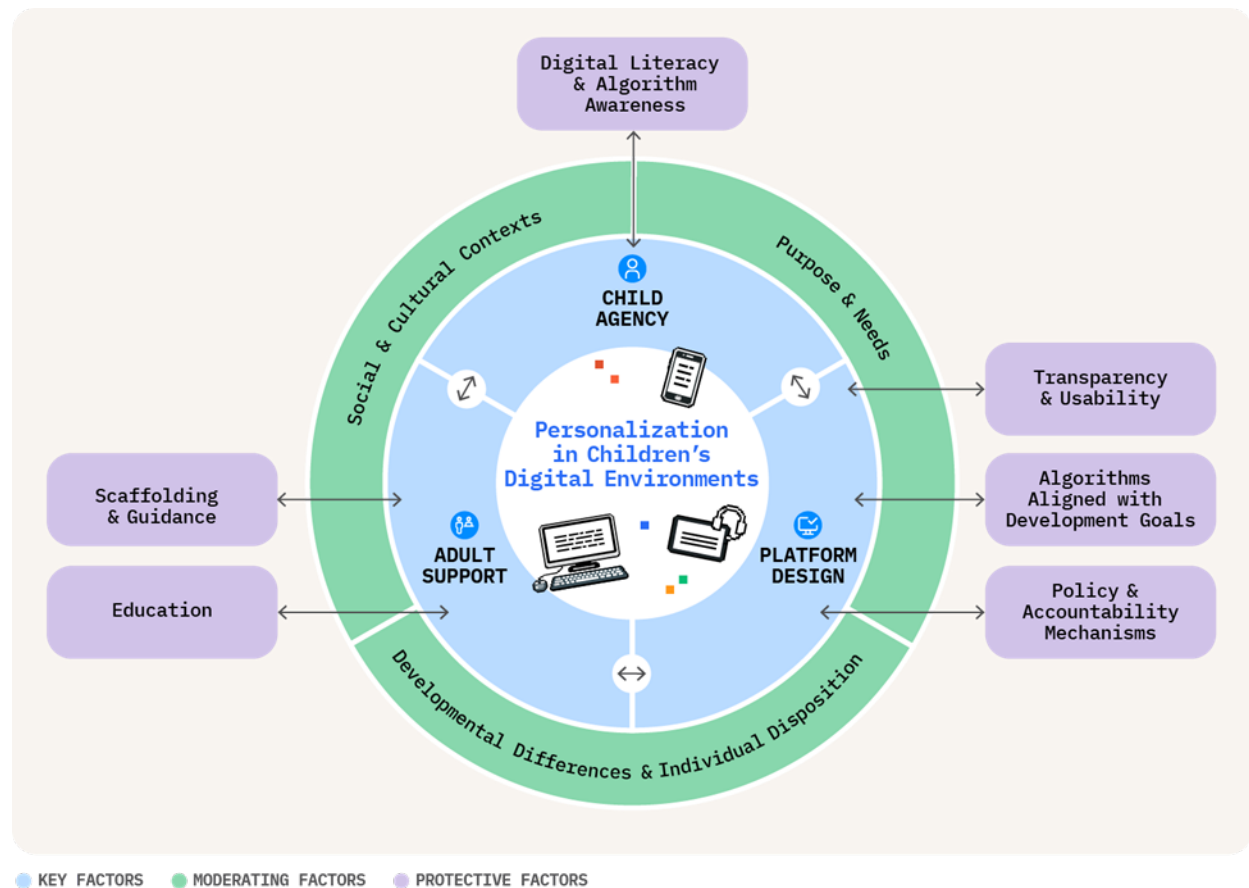
ignore the complexity of children’s online experiences and place little attention on how personalization can support positive outcomes. Few current policies effectively incentivize tech platforms to prioritize fostering beneficial experiences and promoting learning, exploration, or well-being. Consequently, families face challenges in ensuring their children access relevant or useful content that enhances learning and well-being.

The implications of personalization for children’s learning and well-being outcomes remain under-explored in relation to how children navigate, interpret, and respond to personalized algorithmically curated environments. Although much of the current debate focuses on risks, personalization also enables more relevant, engaging, and accessible digital experiences for children, such as helping them find information more efficiently, engage with content that matches their needs, and connect with communities and interests. We have limited understanding of how personalized features influence learning, development, worldviews, relationships, and well-being and what design or policy conditions are needed to maximize the benefits of personalization.

To meet this need, this white paper summarizes evidence related to personalization of digital experiences of children, drawing from the research evidence base and interviews with child development, communications, human-computer interaction, and legal and policy experts. Our hope is that the findings from this project will contribute to a better understanding of how children navigate, interpret, and respond to algorithmically curated digital environments and how the features of personalization can support learning and development.

The complex nature of how personalization shapes children’s experiences and outcomes highlights the need for coordinated efforts across design, business practices, policy, education, and families (see Figure 1). Throughout this report, we examine how these dynamics play out across learning, social, and entertainment contexts.

Figure 1. How personalization shapes children’s digital experiences and outcomes



Methods

In this exploratory study, our team sought to better understand the existing body of research evidence and knowledge on the benefits, disadvantages, and challenges to the personalization of digital experiences for children ages 9–17 across a variety of digital spaces (e.g., streaming platforms, social media, search engines, and edtech). The following research questions guide the study:

1. How do current approaches to personalization shape children’s experiences and engagement with content?
2. In what ways do personalized digital experiences enhance or detract from children’s learning and well-being?

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3. To what extent and how does personalization ensure safety while also supporting privacy, agency, and equity?
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To answer these questions, our research team first conducted a literature review of research, including academic articles as well as grey literature (e.g., government and NGO reports, policy briefs, technical reports, and white papers not published in academic journals) related to algorithmic personalization for children ages 9–17 with the goal of highlighting gaps in the current knowledge base and informing expert interview questions. The literature review focused on literature available in English and included research published across international journals. Second, the team conducted semi-structured interviews with leading experts on children's digital media experiences across a variety of disciplines and global contexts.

Participants

To capture a global perspective on both the positive and negative effects of existing personalization systems and algorithms on children ages 9–17, and because knowledge is often siloed by discipline and geography, and political and cultural contexts shape children's digital experiences, we aimed to include a sample of experts that varied by geographic location and academic disciplines. Our research team identified 92 potential interview candidates and invited them via email to participate in an hour-long interview, offering US\$400 as compensation for their time. Thirty experts responded and agreed to our request to participate. The list of potential interview candidates included 25 suggestions from Google staff, vetted by the research team, as well as scholars from the literature review conducted earlier and recommendations from experts during interviews about other important viewpoints to include. The final sample of experts included researchers, designers, and thought leaders representing a range of disciplines, including child development (cognitive psychology); education research (social science, sociology, political science, and learning science); computer science; civic literacy, data literacy and AI literacy; communication sciences; and law (digital privacy and safety). Nearly all interviewees held academic positions at universities or other academic institutions, and a smaller number worked within nonprofit research, policy, or advocacy organizations.

The interviewees worked in the following 14 countries: Australia, Canada, Germany, India, Ireland, Netherlands, Norway, Portugal, Singapore, South Africa, Spain, Switzerland, United Kingdom, and United States.

Data Collection and Procedures

The research team conducted all interviews between December 2025 and February 2026. Researchers used the Microsoft Teams video conferencing app to conduct all interviews in English, with the audio record and transcription function turned on and the video record function turned off. Prior to the interview, participants consented to the interview, including whether to include their name and affiliation in this report (see Appendix).

Analysis

After cleaning interview transcripts, researchers analyzed transcripts using Dedoose, a qualitative data analysis software tool. All seven researchers independently coded the same two interviews using an initial set of codes based on the literature review research questions and interview protocol. The team met to resolve discrepancies and to refine the codebook. After finalizing the codebook, we coded the remaining interviews in pairs with each pair meeting to resolve discrepancies. Researchers then conducted a thematic analysis of the data (Braun & Clarke, 2006). To provide additional insight into the thinking among experts in the field, we have included quotes illustrating findings throughout this report, and we edited the quotes to remove filler language (e.g., um, like, etc.).

Findings

We report our findings organized by research questions. In the first section, we start by describing personalization approaches and mechanisms and what is known about how they shape children’s digital experiences. In the second section, we describe the evidence about the benefits and risks of personalization for children’s outcomes, including their well-being and learning as well as safety, equity, and agency, and the role of parents, caregivers, and educators in scaffolding and managing personalization. Lastly, in the third section, drawing on these findings as well as recommendations from experts, we summarize implications for policy and design of personalization platforms.



How Children Experience and Engage with Personalization

Personalization can be defined as “the process that changes the functionality, interface, information content, or distinctiveness of a system to increase its personal relevance to the individual” (Blom & Monk, 2003). Personalization is a broad concept that is used in many disciplines, products, and designs (Kucirkova et al., 2021). For example, some disciplines conceptualize personalization as tailoring environments to support learning or to foster social relationships, whereas others frame it as a set of algorithms that can be used to predict preferences or to segment users based on behavioral data (Fan & Poole, 2009). Child-facing personalization serves distinct purposes across different sectors. The effect of personalization on children depends on factors such as context, purpose, and design. Experts concurred that personalization has diverse meanings:



“I think I’d want to start by saying personalization means different things to different people ... I think it’s worth stepping back about the different ways that personalization can be used ... because some ways of thinking about personalization I can be very supportive of and others I can be very concerned about.”

In educational contexts, personalization typically aims to adapt experiences to children’s developmental needs, scaffold learning, provide feedback, and maintain engagement. Mechanisms of educational personalization include adaptation of materials to fit learner preferences, developmental stages, media preferences, prior knowledge, or motivation level (Jannach et al., 2025; Tetzlaff et al., 2021).

The rationale for personalizing children’s digital experiences draws from several disciplines. In the learning sciences and developmental psychology, it aligns with theories of scaffolding and Universal Design for Learning, which emphasize flexibility to support diverse learners (Thomann & Deutscher, 2025; U.S. Department of Education, 2024). Human-computer interaction and information science highlight the need to balance system-driven adaptation with user choice and to maintain transparency to avoid narrowing experiences through feedback loops (Hildebrandt, 2022). Media and civics perspectives underscore the need for personalization systems that tailor content while maintaining exposure to diverse viewpoints and cultural experiences (Kucirkova, 2019).

In addition to aligning with theories about how to help children learn and develop, commercial interests also drive approaches to personalization. Commercial personalization often aims to enhance marketing effectiveness and optimize users' attention by showcasing their interests (Cacdar Aksoy et al., 2021; Bhandari & Bimo, 2022; Krstić, 2020). Children and other demographic groups may be particularly vulnerable to personalized advertisements due to limited data literacy, which can lead to difficulty recognizing persuasive intent or distinguishing advertisements from noncommercial content (Krstić, 2020). Experts identified a key tension in incentives that guide approaches to personalization of digital platforms, namely, that profits are driven by engaging users over time, which can come at the expense of children's well-being and learning. However, experts emphasized that this tension is not solely about the overfocus on engagement itself but also about the quality of the content. When digital platforms are designed with children's needs in mind, children can benefit from personalized, age-appropriate experiences and may experience a range of benefits, including learning, social connection, and positive effects on well-being (Munzer et al., 2026; Youssef, et al., 2025).

Forms and Mechanisms of Personalization

Personalization takes multiple forms. The literature emphasizes a few dimensions such as **content personalization** (what is presented); **interface personalization** (how it is presented); and **pathway or instructional personalization** (how learning pathways, feedback, pacing, and scaffolds adapt over time). Content personalization adapts what a child receives by adjusting difficulty, sequencing, and subject matter based on how the user has interacted with the platform in the past. Interface personalization adapts navigation, narration, visual presentation, and accessibility features to align with the developmental stage or preference (Jochmann-Mannak et al., 2010). Learning personalization often builds upon both content and interface personalization to provide individualized instruction, feedback, scaffolds, and challenges that adjust to performance and developmental profiles (Pane et al., 2017). Child-facing systems may also incorporate feedback; pacing; goal setting; and social, identity-based, and commercial personalization mechanisms. These forms often overlap, and their implications depend on how and why they are implemented.

Personalization can either target an individual (individuated personalization) or a category of individuals (categorical personalization). In addition, personalization differs in terms of who or what is primarily responsible for making decisions about what content is delivered, how it is presented, and what pathways are available or prioritized. Explicit personalization takes place when a person plays an active role in shaping what they see. Implicit personalization takes place when the system decides automatically what to show the user (Fan & Poole, 2009).

Algorithmic, Behavioral, and AI-Driven Personalization

Personalization uses a range of methods to tailor content to users. Recommender systems can use large amounts of data, including past behavior, similarities to other users, features of the content itself, and demographic information. Many systems use multiple approaches. For example, they may recommend content that similar users liked (e.g., collaborative filtering); suggest items related to what a user previously chose (content-based algorithms); tailor suggestions based on language, culture or community location (demographic systems); or use more complex systems that map relationships between users and content (knowledge-based approaches) or hybrid recommender systems that combine several of these approaches (Ricci et al., 2015; Gómez et al., 2021; Harambam, et al., 2019).

Some systems adapt in real time by tracking signals, such as how long a user stays on an item or content, response time, or whether they make errors and then they adjust difficulty levels, pacing, feedback style, or rewards (Shute & Zapata-Rivera 2012). More sophisticated AI systems use machine learning models to predict user states, such as boredom, frustration, or mastery, or to classify users into profiles, and generate individualized learning or content pathways. To reduce the risk of “filter bubbles,” where users only see similar content, some systems intentionally introduce more variety by adding diverse or random recommendations.

All these approaches rely on collecting and processing user data (Gómez et al., 2021). Platforms gather information that users provide directly, such as birthdates; behavioral data, such as clicks, viewing time, and interaction patterns; and metadata, such as location or device type (French, 2018). Some systems combine these data into user profiles that refine recommendations and optimize engagement or learning outcomes (Rao et al., 2015).

Because children are a particularly vulnerable group, it is important to consider transparency, data minimization, data sharing, and child-centered design when evaluating how personalization systems affect young users. While many platforms offer tools that allow users to influence their recommendations, these tools often fail to meet children’s needs. They often require reading lengthy explanations and navigating complex settings—both of which can create barriers for young users (Livingstone, et al., 2019).

Children’s Digital Engagement Across Platforms

Although much of the current debate focuses on risks, personalization also enables forms of relevance, access, and connection that are difficult to achieve in non-personalized environments. When implemented well, personalization can make digital environments more navigable, engaging, and responsive to children’s needs. This section first describes how

children engage across digital platforms, then examines how personalization shapes those experiences, and finally considers how engagement changes in the absence of personalization.

Today's children, particularly in high- and middle-income countries, and increasingly so across the globe, are constantly immersed in personalized digital environments (Piotrowski, 2025). Children move fluidly across digital spaces throughout the day—searching for homework help, watching videos to relax, or chatting with friends. Children go online for many reasons, including learning, entertainment, social connection, and participation, and they use different platforms for different purposes that shape how they engage. Across these spaces, personalization systems help curate what children see and recommend what they do next, alongside the influence of parents, teachers, and peers.

When children use online tools such as Google Search or YouTube to seek information, support schoolwork, or answer everyday questions (Ofcom, 2025), they often draw on system cues such as rankings and query suggestions to judge relevance and decide what to click (Vanderschantz & Hinze, 2021; Bettencourt et al., 2022). In many cases, children also benefit from collaborative search behaviors, such as collaborating with peers or receiving guidance from adults while navigating information (Foss et al., 2013; Pera et al, 2019).

When children engage with platforms in more informal, interest-driven ways—often for entertainment, relaxation, exploration, or social interaction—they frequently turn to social media, video streaming sites, and gaming platforms. In these spaces, engagement often reflects their interests and peer communities. For example, a child may watch a music or dance video, laugh at jokes and memes, or check influencer or creator news. Emotionally appealing, trend-oriented, and multi-sensory content tends to attract especially high engagement (Virós-Martín et al., 2024).

Social connection and participation are also crucial motivations that bring children online. Across a range of digital environments, children can connect with peers, find affinity-based communities, explore identities, build upon their interests, and engage with social causes (Weinstein & James, 2022; Pathak-Shelat, 2018). These experiences can be especially important for children with marginalized identities (Ito et al., 2010). One expert noted,

“Children and people who are marginalized in their everyday social groups were the first to really take to online spaces. So LGBTQ kids, neurodivergent kids, gender minorities ... if you don't have a context to share and create and organize in your local community, you have much higher motivation to go online ... the online space was transformative for young people who may not have had peers or caring adults who shared their identity in their local community.”

Children often experience digital spaces not as isolated environments but as extensions of their social worlds—co-viewing videos, sharing memes, reacting to posts in real time, coordinating plans through group chats, or participating in cause-driven conversations. One expert described this use:

“For many kids, when they stay together, they watch content together, or they share with each other, they text each other, or they just share on their social media platforms. So many of those experiences are fundamentally social, and especially for how they build communities together.”

Beyond social benefits, these digital environments can foster opportunities for creativity and skill building. For example, on gaming and creator platforms, **children can create, build, remix, perform, and share** with others by designing virtual worlds, producing videos, moderating online groups, or coordinating in multiplayer environments (Ito et al., 2010; Resnick, 2017). These spaces blur the line between audience and author as children are not only viewers but creators, performers, and organizers. This reflects broader trends in which children expect to co-create the content they consume, often remixing and adapting it to their own interests for their own communities (YouTube, 2025). Experts described a few examples:

“[In gaming environments], it really shows that children enjoy the experience of having control, of being able to choose what they engage in the first place, the ability to reach out to others of shared interests, organize and create things. These are all things that digital media has really radically expanded the space of agency for children.”

“It’s really important for children to feel that ‘I’m someone who can express myself’ ... and creating things is the way that you can feel a contribution to the world.”

Taken together, children’s digital engagement unfolds differently across platforms and contexts. Understanding how personalization shapes these varied experiences requires first recognizing the diversity of motivations that first bring children online. These varied forms of engagement provide the context in which personalization operates. These patterns of engagement highlight that personalization operates in environments where children seek relevance, connection, and meaning—conditions under which personalization can either support or constrain development depending on design.

How Personalization Shapes Children’s Engagement

Personalization shapes children’s engagement by influencing what content they encounter, how it is presented, and what actions are suggested next. However, personalization does not operate uniformly across digital spaces. Platforms differ in their algorithmic logic and design

features, and children approach each platform with different goals, such as searching for information, relaxing with videos, or finding communities. These differences shape how personalization influences engagement in distinct ways (Taylor & Choi, 2022; Swart, 2021). Across these forms of engagement, personalization can enhance children's experiences by increasing relevance, reducing effort, and supporting discovery. At the same time, these same mechanisms can introduce trade-offs when not carefully designed.

When children use platforms to search for information, practice skills, or do schoolwork, personalization can scaffold finding relevant information and support engagement. For example, when students use Google Search or YouTube, algorithmic rankings and suggestions help surface relevant information more quickly, reducing cognitive load and helping children find learning material that aligns with their developmental needs and understanding (Kammerer & Bohnacker, 2012). One expert explained:

“Imagine going to a grocery store, where nothing is in aisles and everything is just in the center of the floor, and it’s like, go find what you need. It would be chaos. Personalization provides order into a space that could otherwise be chaos.”

Personalization can also promote children's engagement with new and complex concepts by aligning learning tasks with learners' prior interests and background (Bernacki & Walkington, 2018). For example, instead of solving abstract algebra equations, a student who enjoys basketball might work on problems that calculate a player's shooting percentage or analyze scoring trends, making the math feel more relevant and engaging while still targeting the same underlying concepts.

Personalization also plays a role in helping children learn at their own level. Learning science research has shown that children learn best when they receive material and feedback that is optimized for their individual skill level and adapts as they learn (Boom, 1984; Skycak & Roberts, 2026; Rose, 2015).

At the same time, these benefits depend on how systems balance guidance with exploration and effort. When personalization overemphasizes efficiency or past behavior, it may unintentionally limit opportunities for children to encounter diverse perspectives (e.g., “filter bubbles”) or to engage in productive struggle, both of which play an important role in learning (Kucirkova, 2019). One expert explained this approach:

“Part of what good personalization is, helping [children] see the range of possibilities ... And giving choice. Always let the learner choose from multiple pathways.”

When children engage with platforms in more informal, interest-drive ways, such as watching videos or browsing social media, personalization can create joyful, highly engaging, and seamless experiences for children. These experiences are particularly pronounced in short-form, feed-based environments, which are increasingly common across a wide range of platforms. In these approaches, feeds of short-form, video-based continuous content often align closely with their interests and preferences, making content feel enjoyable and satisfying (Taylor & Choi, 2022).

However, these same features can also shift engagement toward more passive and automated use. Continuous streams of content (e.g., autoplay) provide minimal stopping cues and can sustain attention and extend engagement time (Chen et al., 2024; Virós-Martín et al., 2024). In these cases, children may have limited opportunities to make choices about what to engage with next, unless platforms put other well-being measures in place, such as features that support pausing, reflection, or control of content. This dynamic may lead to feelings of frustration, reduced control, or other well-being concerns (Virós-Martín et al., 2024; Perez Vallejos et al., 2021). For example, one expert described the challenge:

“[Personalization] encourages attention and discourages disengagement. It makes it really hard to look away when you combine the shortness of a video that’s constantly entertaining with every video picked just for you, with there’s always another one ... it’s the perfect storm for capturing attention.”

By contrast, longer-form or more intentional viewing experiences often involve more deliberate choice and may provide more natural stopping points. While personalization still shapes these experiences (e.g., through recommendations), engagement may be less continuous depending on platform design.

In addition, algorithms struggle to detect and respond to children’s shifting preferences or momentary needs. For example, experts cautioned that it can be hard to “un-learn” prior signals once a user’s situation changes. As a result, unless users actively engage with their personalization settings, such as deleting search data or watch history, platforms may continue to recommend content aligned with a temporary emotional state long after it has passed. In this way, although children may use social media to fulfill emotional needs, personalization on these platforms does not function as an effective tool for emotional regulation (Davis et al., 2025; Scott et al., 2024). One expert described an example:

“For example, a teenager going through a breakup might be searching for breakup music and related content ... and for a moment that provides comfort and reassurance. But when the breakup is done and the platform is still giving them even more personalized

heartbreak content, it becomes frustrating. When the personalization desired was for something momentary ... and that life moment has passed and the system doesn't understand it, then you get friction and frustration."

Personalization can help children find and participate in communities that align with their interests and emerging identities. Many children go online to find communities, such as others who share a niche hobby, a cultural background, a creative passion, or a social cause. Personalization can support this process by surfacing creators, groups, hashtags, or discussion threads that reflect a child's interests, including those not available in their immediate offline environment (Karizat et al., 2021). For example, a child interested in animation may receive recommendations to fan communities, while another who is curious about climate activism may encounter youth-led campaigns or local events. One expert explained,

"[For example], I'm a kid and I love Pokémon, but I love specific types and you can specialize and find other friends who have complementary or similar interests ... It's that ability to really find relationships and contexts that are focused on a specific interest that is the kind of personalization that I've tended to look at ... is that you can find somebody who really gets you and a deep sense of belonging."

Additionally, personalization can also reinforce the engagement process by amplifying content that resonates with a child's evolving interests and emerging self-identities while filtering out different or contradictory perspectives (e.g., TikTok "For You"), leading to pleasant experiences that let children feel "seen" and understood (Nora McDonald et al., 2024; Lee et al., 2022). One expert described this experience:

"Personalization creates a space that knows the person or so they feel known. It feels like they are seen and heard ... They don't necessarily stop so easily because it's giving them more of what they were looking for. You will also see more of a feeling of joy. They like it more. It's pleasant."

However, when not carefully designed, personalization can amplify children's mental models or stereotypes through repetitive exposure, unintentionally creating echo chambers (i.e., environments in which users mostly encounter content that aligns with their own beliefs) that raise broader concerns around the social implications of personalization, especially around political and news content (Simpson & Semaan, 2020; Eg et al., 2023; Bucher, 2019). As one expert noted,

"All of our media worlds are so atomized and customized. The news we see, the social feeds that we get, it's very hard to find things that we all do in common."

Cross-Cutting Patterns

Across contexts, personalization influences children’s engagement in multidimensional ways—behaviorally by shaping attention and time use, affectively by reinforcing enjoyment and validation, and cognitively by structuring pathways and exposure. Overall, personalization shapes children’s engagement through a dynamic interplay between their needs, developmental characteristics, and the design logic of the platforms they navigate.

Digital Engagement in the Absence of Personalization

To better understand the role of personalization, it is also important to consider how children’s engagement changes when personalization is reduced or removed. For example, some legislation (e.g., New York’s Stop Addictive Feeds Exploitation (SAFE) for Kids Act) targets algorithmically driven feeds for children through requirements such as reverse chronological feeds or popular feeds; however, there is some concern that approaches like these may detract from users’ experiences and even increase potential risks. **Removing personalization does not eliminate the challenges associated with personalization; rather, it creates a different set of trade-offs.** Although removing algorithmic tailoring may increase effort, intentionality, and exposure diversity in some contexts, it may also reduce perceived relevance, enjoyment, and adaptive support, with engagement unfolding differently across contexts.

Information seeking and learning: More intentional effort, less tailored support. When children search for information without personalized rankings or recommendations, they often need to exert more effort to locate relevant information and resources. Without algorithmic rankings that elevate relevant information, children must evaluate sources more deliberately, which can increase intentionality and perceived control. In some cases, this may encourage productive struggle and self-directed exploration (Kucirkova, 2019). One expert remarked,

“Learning sticks when the experience is not personalized, when users or learners need to struggle to get to the goal ... it is through this productive struggle that they actually learn.”

However, experts noted that a “one-size-fits-all” approach does not consider individual needs and interests and may deprive children of scaffolding opportunities. Without tailored scaffolding, adaptive pacing, and feedback, children may encounter experiences that are either too difficult or not engaging (Bernacki & Walkington, 2018).

Informal, interest-driven engagement: Reduce time spent, lower enjoyment. In informal, interest-driven environments, emerging evidence from studies of adults suggests that

removing personalized algorithmic feeds may reduce usage time and engagement (Guess et al., 2023; Dekker et al., 2025). For example, one experimental study on TikTok use found that removing personalization reduced time spent on the platform and increased users' sense of control: participants engaged in less automatic scrolling and were less likely to exceed intended use time (Dekker et al., 2025).

At the same time, these studies also suggest trade-offs. Participants reported that the non-personalized experiences felt less enjoyable and less meaningful, and most indicated they would not continue using the app in that form. In other words, although reduced personalization may support more intentional use, it may also decrease perceived relevance and engagement. These findings remain limited and context-dependent, but they highlight an important tension between control and enjoyment in personalized environments. As one expert explained:

“[Not personalizing] leads to a lot of the things we might want, less time in one space, more intentional use. But that means when they were in it, they were getting stuff they didn’t even like. Well, that’s wasted time as well ... Flow, while always sounding ideal, can come at the peril of schoolwork and social relationships and family relationships. There needs to be balance.”

Social engagement and participation: Broader exposure, with mixed implications. In social and community-oriented environments, the absence of personalization can alter how children discover and participate in content and communities. Without tailored recommendations, children may encounter a more uniform or popularity-driven set of content, fostering shared reference points among peers.

However, broader exposure does not necessarily translate into greater diversity of perspectives. Non-personalized or general popularity-driven feeds may still amplify dominant voices and trending content depending on how platforms structure visibility. In addition, removing personalization may make it more difficult for children to find niche communities or identity-relevant spaces that depend on targeted discovery mechanisms. One expert remarked:

“There is something there about how platforms that are designed in Western countries are imposed on African countries and how there is a mismatch in the basic ideological infrastructure upon which those algorithms and platforms are built ... where designers and platform owners and governments should be aware of the ethical implications ... and how it influences what it means to live authentically, without feeling like your own cultural identity is being marginalized.”

At the same time, removing **personalization may also remove children from protective mechanisms designed to align content with children’s age or developmental stage.**

Removing these mechanisms may increase exposure to unfiltered or age-inappropriate content (Stoilova et al., 2024), highlighting the trade-offs between openness and safety.

Cross-Cutting Trade-Offs

Solutions to challenges in implementing personalization lie not in removing personalization all together but shifting the focus to how system designs might balance relevance, agency, diversity, and inclusion in ways that support meaningful and developmentally appropriate engagement. One expert emphasized that removing personalization would not automatically address polarization, nor would forcing “educational” content into children’s feeds necessarily increase meaningful engagement. Instead, the critical issue lies in whether platforms prioritize maximizing time spent and behavioral signals or supporting children’s developmental growth and well-being. One expert explained:

“What are some other alternatives to design the systems? We think all the kids should read the New York Times, so we put it there. I don’t think that’s a good solution, and I think platforms actually do that. But kids don’t like it. If you ask a boy to watch ballet videos, they will not be interested, right? So, removing personalization, I don’t think that’s the solution, for both user experiences and benefits for kids.”

Children’s Understanding of Personalization

As children navigate across digital environments, their understanding of how personalization systems operate—such as how they perceive, interpret, and respond to the algorithm systems—is an important part of how their engagement unfolds. However, children’s knowledge of how these systems function remains uneven and often incomplete, limiting their ability to exercise meaningful control or make fully informed decisions about their digital experiences.

Children’s understanding of how personalization algorithms operate is varied but often limited. Children have varying levels of awareness about how personalization systems function and shape their digital experiences (Bell et al., 2022; Levido et al., 2025). Research has shown that most children understand that their usage impacts recommender systems, and some even develop strategies for navigating and shaping algorithmic feeds (Ernst, 2025; Revealing Reality & ICO, 2025). Users sometimes develop “folk theories” to attempt to explain how the personalization algorithm is working and how to control its outcome (De Toni et al., 2025).

Similarly, experts noted that children often have a basic understanding of how their usage patterns affect what they see. For example:

“Even 9-year-olds have told me ... if I want something, I should search for that kind of thing repeatedly ... that way I can train my algorithm.”

“They know, OK, if I like or look at something, this is influencing what I see next.”

However, children’s understanding of the mechanisms of personalization algorithms may be limited. Children typically have limited insight into how their cumulative interactions affect personalization. Swart (2021) found that youth awareness of personalized algorithms varies by context and is often triggered by expectancy violations, such as when a system recommends content that feels incorrect or misaligned with their interests. For example, one expert reflected on a lesson with teens about personalization algorithms:

“They started off with the algorithm is my friend ... and by the end ... the algorithm is somewhat problematic because it’s making assumptions about me and I don’t think I like the way that it is making those kinds of assumptions or they’re not always correct.”

Children lack meaningful understanding of data privacy. Literature shows that children, even from an early age, may understand interpersonal privacy (i.e., the ability to control one’s personal information within a social relationship) but have less clarity about algorithmic data flows or third-party use (Pangrazio & Selwyn, 2017; Zhao et al., 2019). While some children demonstrate nuanced understanding of algorithms (Ernst, 2025), many do not (Starks & Reich, 2024; Wang et al., 2022). Experts questioned the extent to which children can give meaningful consent—or assent if younger than 13, and if under 13, understand what their parents are consenting to on their behalf—as their developmental vulnerabilities and limited digital literacy make it difficult to understand how platforms use the data and what they are giving up (Livingstone et al., 2019). One expert noted:

“They don’t feel the violation of privacy and what they’re giving up, they’ve been giving up since they’ve been online at this point, and [they think] you have to give that up in order to participate in these platforms, to some extent.”

This limited understanding of data collection and use has greater implications for how they interpret search results and advertising, especially given developmental constraints in recognizing persuasive intent. One expert explained:

“Kids do not notice ... personalization of results from a search ... they will choose that first result even more than adults do because the ‘computer should know.’”

Experts also noted that children’s perceptions may shift with media literacy education. Both the literature and our interviews show that children’s understanding of personalization, particularly of opaque algorithmic recommender systems on the major digital platforms, is developing but not complete. Accordingly, scholars and practitioners have called for more formalized media literacy instruction, strengthened child agency, and greater platform transparency (Bell et al., 2022; Livingstone & Third, 2017; Gombar, 2025). One expert made the following suggestion:

“Teach them why they see this content. And if we don’t want to see this content, what are some actions they can take? So, [the] first few experience[s] on those platforms, share with them. Here’s the content. Do you like it? And then maybe unfold that experience with them a little bit for younger kids, right? Platforms can take more responsibilities to really just handhold and guide those youth, those little ones.”

Although digital literacy skills are recognized as a crucial skill globally (Howard et al., 2021), evidence on how to teach it effectively and at scale remains limited. Existing approaches are fragmented; vary widely across contexts (d’Haenens et al., 2025; Li et al., 2025; Huang et al., 2024); and rarely offer sustained developmental support, and few have demonstrated consistent effectiveness. Experts described the need for a more comprehensive approach to supporting children’s digital skills that involves parents, educators, platforms, and regulation.

At the same time, other experts warned against placing too much responsibility on children and parents/caregivers, arguing that platform design itself could provide these supports.

Developmental and Individual Differences in How Children Experience Personalization

Children’s engagement with personalization varies widely across developmental capacities and individual characteristics (Landoni et al., 2024; Ungruh et al., 2025). Across these differences, personalization can support children’s navigation and access to information and resources but does not necessarily strengthen their ability to critically evaluate or understand how content is selected. As cognitive capacities, identity formation, and social priorities evolve so too do children’s abilities to interpret, navigate, and critically assess algorithmically curated environments.

Age and developmental stage influence children’s personalized digital experiences.

Literature highlights the significant role of age and developmental stage in shaping how children experience and understand personalized systems. As children mature, gains in cognitive development, reading proficiency, and digital competence may help reduce cognitive

load and support information seeking by surfacing more relevant content. In this way, personalization can make digital environments more navigable and accessible.

However, these benefits do not extend equally to the critical evaluation needed to navigate personalized digital experiences effectively. Even older children often struggle to evaluate credibility, understand algorithmic influence, or fully grasp data privacy implications (Bell et al., 2022; Foss et al., 2013; Hargittai et al., 2010). Several experts noted that younger children are generally less aware of algorithms and more susceptible to influence, whereas older children demonstrate more awareness of algorithms but do not necessarily understand how they work or fully grasp risks such as data privacy, highlighting a key opportunity for awareness building. One expert noted:

“We give [young people] credit for being very facile with technology. And yet often that is a surface level ‘I know how to get where I want to go. I know how to get around blocks’ without really a thought about what they’re giving away in exchange.”

Although personalization can support efficiency and access, it may also obscure how information is selected, making it more difficult for children to question or critically assess what they see.

Media use is integral to children’s social and identity development. Beyond algorithmic understanding, social motivations and identity exploration increasingly shape children’s digital engagement, particularly during adolescence, as they use online environments to connect with peers, seek belonging, explore interests, and experiment with self-expression and creative production (boyd, 2014; Ito et al., 2010; Weinstein & James, 2022). Personalized digital environments allow young users to stay up to date on trends and connected to friends, often reinforcing these social and identity-related motivations by prioritizing content aligned with their interests and peer networks—although some experts spoke to the trade-off of needing to stay plugged in despite potential negative effects.

Other individual characteristics also contribute to children’s engagement with digital media and effects. These differences shape not only what children see, but how they interpret and respond to personalized content. Gendered content preferences often shape engagement (Virós-Martín et al., 2024), while cultural background influences what children access and how they interpret information (Pera et al., 2023; Schedl & Bauer, 2019). In this sense, personalization has the potential to increase the cultural relevance and accessibility of content, for example, by surfacing language-appropriate or locally meaningful material. At the same time, it may also reinforce geographic, cultural, or socioeconomic disparities if systems over-rely on locally available or historically dominant content, limiting exposure to a broad

range of perspectives. Social-emotional development influences engagement with appearance-focused, political, or emotionally charged content (Hilbert et al., 2025; Valkenburg & Peter, 2013).

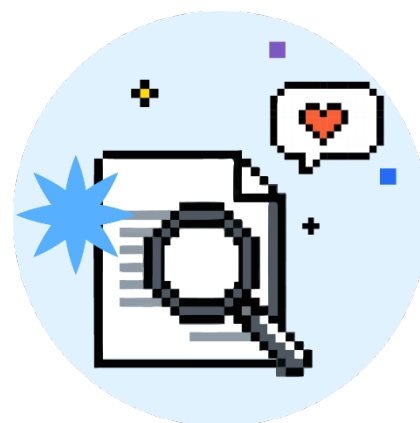
These developmental and individual differences underscore both the promise and the difficulty of personalization. Although tailored systems can respond to diverse needs, children's interests, identities, and capacities change over time and do not follow a simple linear path. These systems often rely heavily on past behavior, which may not fully capture children's rapidly shifting needs, contexts, or intentions. This creates a fundamental challenge for personalization systems, which often rely on past behavior to predict future preferences, even as children's needs and identities shift rapidly. One expert recommended ongoing consultation with children essential to ensure that personalization systems remain responsive and appropriate, noting:

“I think one of the biggest challenges for young people is that their needs are not static. They evolve as they age up, so that’s such a tricky thing to pin down . And it’s not always on this very linear age continuum. So many different factors come into play, whether it’s gender, whether it’s familial context, location, what’s happening in the world around them. Young people don’t develop in a very linear way, and so the needs are sort of ping ponging, which makes it really hard for developers I realized, but I think all the more reason to need that consultation piece.”

To meet this challenge, many platforms incorporate dynamic personalization features, such as user feedback tools, preference controls, and adaptive recommender systems that allow experiences to evolve over time. Although these features can be difficult to find or implement, a critical barrier for some experts, their existence points to platforms’ incentives to remain relevant and engaging to users and their families.

Effects of Personalization

The effects of personalization extend across key dimensions of children's development, including learning, well-being, safety, equity, and agency. Across these domains, evidence points to both promising opportunities and meaningful risks, depending on design and children's developmental context. When implemented well, personalization can support development by fostering engagement, providing tailored guidance to build learning, and creating opportunities for exploration and self-expression.



Positive Effects on Learning and Well-Being

When thoughtfully designed, personalization can support learning and development by strengthening agency, scaffolding learning, and enabling identity exploration. Three interrelated mechanisms consistently emerge as pathways through which personalization supports children's learning and development: (1) increased engagement and meaning making, (2) adaptive scaffolding and feedback, and (3) creative learning and self-expression.

Personalization can increase engagement and motivation through relevance.

Personalization can improve children's learning outcomes by increasing engagement and motivation when content connects with their interests, prior knowledge, and developmental level (Bernacki & Walkington, 2018). Relevance alone is not the outcome; rather, relevance can serve as a pathway to deeper persistence, sustained attention, and more meaningful cognitive processing. When content connects to what children care about and their prior knowledge and experiences, it enables them to make authentic choices and derive personal meaning from the content (Kucirkova, 2019), leading to improved comprehension, greater persistence, and positive attitudes toward learning. In practice, this can help children stay engaged longer, return to challenging tasks, and develop more positive attitudes toward learning. One expert described an example:

“If you are able to give the right type of content to the child ... it might be actually the things that the child is able to comprehend ... but also challenging enough so that there is a path forward to learn.”

However, robust evidence remains limited about how these personalization mechanisms operate across domains, developmental stages, and sociocultural contexts, as well as how their effects vary by age and levels of digital literacy (Kammerer & Bohnacker, 2012; Dumont & Ready, 2023).

Both research and interviews highlight not only the need for developmental appropriateness and relevance but, crucially, active participation rather than passive consumption (Fitzgerald et al., 2018; Kucirkova, 2019). In this case, active engagement refers to children making choices, creating, or interacting with content by responding to prompts and producing their own content as opposed to viewing or scrolling passively. Emerging platform features illustrate how this can be supported in practice, such as including learning-oriented tools with interactive features (e.g., quizzes). Thus, the developmental impact of relevance-based personalization lies not only in attention but also in greater capacity to learn deeply.

Personalization can provide adaptive scaffolding and feedback. Adaptive personalization supports learning by tailoring feedback, explanations, and task difficulty to children’s prior knowledge, comprehension level, and moment-to-moment performance. Personalized feedback, such as elaborated hints or expanded explanations, improves metacognition, self-regulation, persistence, and digital literacy (Hansen & Rieh, 2016; Kammerer & Bohnacker, 2012; Maier & Klotz, 2022).

A growing body of research highlights the potential of adaptive scaffolding to provide responsive support (e.g., tailored feedback, elaborated hints, and responsive explanations) that can strengthen metacognition, self-regulation, and persistence (Maier & Klotz, 2022; Dumont & Ready, 2023). A meta-analysis of 16 randomized controlled trials conducted between 2007 and 2020 across five countries found a moderate positive impact on learning outcomes. The largest effects occurred in systems that adapted instruction to learner’s level of understanding, outperforming approaches that personalize based only on interests, feedback, or assessment. Similarly, studies of digital games show that enhanced scaffolding and adaptive supports improve learning outcomes compared to non-personalized designs (Clark et al., 2016).

Some experts echoed this potential, noting that personalized systems may support learning not only by increasing motivation, but by strengthening learners’ capacity to monitor, reflect on, and direct their own learning processes over time.

However, these benefits depend on context and design. Adaptive systems with scaffolds and tailored feedback tend to be more effective in structured domains, such as mathematics, where learning goals and pathways are well-defined. However, both research and interviews highlight important limitations. There remains limited consensus about what constitutes developmentally appropriate learning pathways or high-quality feedback across different learner contexts. As a result, although adaptive scaffolding is promising, translating learning science into scalable systems that work across diverse children, domains, and settings remains challenging. Large-scale evaluations of personalization learning programs report mixed findings, with effects varying substantially by subject, age, and program quality (Dumont & Ready, 2023). Findings from related areas, such as game-based learning, suggest that interactive and adaptive features can support engagement and learning when aligned with clear learning goals, but effects are inconsistent, such as when design and pedagogy are poorly aligned (Hirsh-Pasek et al., 2015; Fitzgerald et al., 2018).

Personalization can offer opportunities for creative learning and self-expression.

Personalization can support children’s creativity and self-expression by amplifying their own

ideas rather than replacing them. AI-enabled tools, for example, can offer prompts and scaffold starting points to help children explore interests, experiment with new ideas, and support their creative learning (Resnick, 2024), while also helping children encounter content aligned with their emerging interests and identities (Ito et al., 2010). Some experts spoke to the potential for personalization to support creative pursuits and self-expression. However, some interviews highlighted that adaptive systems remain more developed in structured domains than in open-ended creative fields, warning of the fine line between having a system enhance independent creative thinking or risk diminishing effortful experimentation by automating aspects of the creative process, thereby raising questions about how personalization can meaningfully support expressive and identity-driven learning. Overall, personalization appears most beneficial for creativity when it positions children as authors and makers rather than passive recipients; it can strengthen identity development, voice, and a sense of contribution.

Taken together, these findings suggest that personalization supports children's development not through a single mechanism, but through a combination of relevance, guidance, and opportunities for participation. When these elements align, personalization can help children engage more deeply, learn more effectively, and express themselves more fully. However, these benefits depend on design choices, user agency, and context, and they do not emerge consistently across all platforms, domains, or developmental trajectories.

Negative Effects on Learning and Well-Being

For all its potential, personalization when poorly designed can also constrain learning and well-being. Literature and interview data point to effects primarily related to narrowed learning opportunities and risks to identity and well-being.

Personalization may narrow learning opportunities. Algorithms that over-target specific interests can restrict exploration, limit curiosity, and promote dependency on digital tools (Danovitch, 2019). Several experts expressed concern that when personalization repeatedly surfaces content aligned with past behaviors, it may reduce opportunities for serendipitous discovery, intellectual risk-taking, and exposure to diverse perspectives. Literature on filter bubbles and echo chambers indicates that algorithmic systems may reinforce prior interests and limit epistemic diversity (Bahg et al., 2025; Misnawati et al., 2025). Danovitch (2019) further argues that heavy reliance on digital tools may weaken independent memory and inquiry strategies. While personalization can increase efficiency, it risks diminishing exploratory learning and broad intellectual development. Although narrowing effects are widely discussed, empirical evidence tracking cumulative exposure patterns over time remains

limited. Some platforms have introduced design measures intended to counteract these dynamics, for example, incorporating principles to promote higher-quality or more diverse content in recommendations for young users. However, we do not yet know how often children encounter genuinely diverse perspectives within personalized systems or whether diversification strategies meaningfully counteract narrowing (Bahg et al., 2025). The threshold at which personalization shifts from helpful relevance to restrictive filtering also remains poorly defined.

Personalization may present some risks to identity and well-being. Under certain conditions, personalization may pose risks to children’s identity development and well-being. Research and interview findings suggest that personalization shapes identity not only through content selection but through amplification dynamics. Algorithmic systems optimized for engagement often prioritize emotionally intense, socially validated, or sensational content over balanced information, which may heighten comparison pressures and distort perceptions of norms (McDonald et al., 2024; Valkenburg & Peter, 2013). *“When you’re talking about personalization... it can slowly shape what young people think is normal,”* one expert explained. Algorithmic audits have identified racial and gender bias in recommender systems (Noble, 2018; Ungruh et al., 2025), raising concerns about the reinforcement of stereotypes. Interview participants indicated that children might not recognize identity or well-being risks embedded within personalized environments, raising questions about awareness and internalization. One explained, *“Most kids don’t talk about any of that ... they enjoy all these games.”* Despite mounting concern about algorithmic amplification, there is a lack of longitudinal evidence examining how personalized content shapes identity formation over time and the extent to which it intensifies or moderates effects. Nevertheless, in response to these concerns, some platforms have introduced design measures intended to reduce exposure to potentially harmful or developmentally inappropriate content for young users. Future research should examine the conditions under which personalization fosters empowerment and belonging versus stereotype reinforcement and vulnerability, as well as the effectiveness of protective design measures.

Personalization and Safety, Privacy, Agency, and Equity

Personalization to Enhance Safety

Personalization can support children’s safety by filtering harmful content and aligning experiences with developmental needs. Although concerns remain about



children’s exposure to risks such as misinformation, echo chambers, and advertising, intentional design approaches that promote active engagement, transparency, and exposure to diverse content may help mitigate these risks.

Personalization may support safety through content filtering. Exposure to inappropriate online content remains a major concern (Livingstone et al., 2014; Papadamou et al., 2020; Radesky et al., 2024; Stöcker and Preuss, 2020) central to many debates around children’s digital rights globally (Livingstone et al., 2024). Experts highlighted opportunities for personalization to support safety by filtering harmful content and enabling developmentally tailored controls, providing access to relevant, inclusive content.

Some popular platforms have developed tools or principles around these efforts. Although the effectiveness of these tools varies (Fairplay for Kids, 2025; Stoilova et al., 2024), experts described the importance of enabling children to shape their digital experiences, build on past experiences, and make refined choices in the future. For example, one expert noted:

“The more choices you are able to make, the better you’re able to ... shape the experience effectively ... building from experience. ‘Last time I did that, I did not have a pleasant experience. Therefore, I’m not going to do that again.’”

Misinformation, echo chambers, and commercial exploitation remain key concerns. At the same time, experts also expressed concern about the proliferation of misinformation, repeated exposure to harmful content through echo chambers, and covert advertising through personalized content. By prioritizing content aligned with past behavior, personalization systems can amplify repeated exposure to misleading information, reinforce narrow perspectives, and embed advertising within content. This makes it harder for children to encounter diverse viewpoints or recognize persuasive intent. Experts frequently referenced young people’s vulnerability and susceptibility to commercial exploitation, as personalized ads and influencer content often blend seamlessly into feeds making children easy targets for deceptive marketing strategies (OECD, 2021). Given children’s limited ability to identify these cues, personalization may make such content more persuasive (UNICEF, 2019). For example, a few experts described the risks:

“For youth and educators, synthetic AI generated misinformation [is a] huge challenge ... we can’t rely on old habits like trusting what we see ... [there’s a] loss of context and provenance in online content.”

“We know ... young kids may not have the metacognitive awareness to understand what an advertiser’s goal is. And when you’re in a state of flow, you’re less likely to cognitively resist information.”

Personalization and Equity

Personalization has the potential to support equity by tailoring content to individual needs, increasing accessibility, and helping children, particularly those from marginalized groups, find relevant resources and communities. However, its effects are uneven. In practice, personalization can both mitigate and exacerbate inequities depending on how systems are designed and implemented.

Personalization has potential to support social and identity-related equity, but lack of careful design may reinforce inequities. Personalization can support equity by helping children, particularly adolescents, find identity-affirming communities and role models, especially for marginalized groups (Avci et al., 2025; Bates et al., 2020; Charmaraman et al., 2024; Ringland, 2019; Watkins & Cho, 2018). These experiences can strengthen belonging (Youssef et al., 2025) and self-esteem (McKinley et al., 2014) and expand children’s experiences by helping smaller or niche creators to reach audiences they might not otherwise reach, allowing children to encounter more diverse interests, communities, and perspectives beyond dominant or highly popular content.

At the same time, personalization systems can reinforce inequities, reflecting broader evidence that new technologies often exacerbate existing disparities (Dumont & Ready, 2023; Rideout & Katz, 2016; Warshauer et al., 2010). Algorithm audits consistently document racial, gender, and cultural bias embedded in personalization systems (Metaxa et al., 2021; Noble, 2018), and emerging research documents similar biases in personalized feedback systems; for example, automated scoring tools may evaluate some responses from English learners more harshly than comparable responses from non-English learners (Wilson et al., 2024). Experts noted children from more marginalized communities are also more likely to encounter harmful representations of their identities in algorithmic content.

Personalization shows promise to enhance educational equity, but evidence is mixed. Personalization can remedy educational inequities by tailoring instruction to individual needs and providing tailored learning materials (Basham et al., 2016; Dumont & Ready, 2023); some studies find benefits for learners with different needs (Chevalere et al., 2022; Major et al., 2021), including opportunities to support accessibility (Castro et al., 2024). Personalized mental health tools also show promise for expanding access for adolescents (Wanniarachchi et al., 2025).

However, evidence remains mixed. Experts noted that, in practice, it is unclear whether personalization achieves equity or furthers disparities. Some noted that higher-achieving children benefit more from personalization, widening disparities in achievement (Nitkin et al., 2022). One expert described the potential opportunities of personalization for equity:

“Youth with disabilities can experience personalization systems that can fail to sort of account for their accessibility needs. But what’s interesting is that there’s actually lots of evidence that can show or that shows a great opportunity for personalization to support and address accessibility needs when done right.”

Structural and socioeconomic inequities influence children’s personalized digital experiences. Personalization does not operate in a vacuum; differences in access to devices and connectivity, digital literacy skills, and adult support shape children’s outcomes more than the design of personalization systems themselves. Without addressing these broader conditions, personalization may reproduce or amplify existing disparities.

Experts highlighted a global digital divide, particularly in the Global South, where access to digital tools and online connectivity remains uneven (Magis-Weinberg et al., 2025). Even where access exists, device sharing can further complicate personalization: Multiple users often share a single device without separate accounts, leading to blended signals that reduce relevance and increasing access to content that may not align with a child’s age, interests, or needs. Even with access, young people in under-resourced contexts lack the skills to use them safely, and differences in parents and caregiver support interact with how children benefit from personalized digital experiences. Parents from higher income brackets tend to be more educated in and better equipped to support their child’s media literacy (Lou et al., 2024), while children from lower-income households and who tend to have less adult support also tend to use more media (Mann et al., 2025; Nikken & Oprea, 2018). One expert described some of these challenges:

“I think that lots of discussions in ... society now have certain assumptions. [In] middle class families, parents [who are] highly educated have the patience, time and capacities to moderate, to teach kids, to handhold them. Most high-risk and vulnerable populations are what I worry about a lot. They don’t have those supporting structures. Maybe a single parent works two or three jobs. Maybe they don’t even have a caregiver.”

Personalization offers meaningful opportunities to support equity—particularly through access, relevance, and connection—and the needs of diverse learners and marginalized youth. However, evidence around personalization’s effectiveness at promoting equity is still lacking.

Structural inequities and biases in design constrain how personalization systems can lead to more equitable outcomes for learning and well-being.

Personalization and Agency

Personalization can support children's agency by enabling them to shape their digital experiences, express preferences, and engage with content that reflects their interests and goals. Learning how to exercise agency is crucial for children's development (Murray, 2025), and personalization holds the potential to enhance children's agency over their own digital experience; however, this potential is contingent upon agency-supportive design, scaffolding, and children's understanding of how personalization systems operate.

Agency-supportive systems and scaffolding foster digital skills. Systems that allow users to adjust algorithms, express preferences, and override inferred patterns are more likely to align personalization with meaningful outcomes. These user inputs are especially relevant for younger children, whose behaviors are often impulsive, exploratory, and inconsistent, making them poor indicators for designing developmentally supportive digital experiences. In addition, to navigate digital landscapes and make choices about these systems, children need extensive scaffolding and, more so, digital literacy. One expert noted:

"It's good to give children certain control to decide that I don't want to share this or I'm not comfortable doing this, but it's only when they are actually digitally literate, they can responsibly make these decisions."

Youth want agency in digital experiences, but many lack the necessary skills. Literature shows that children and adolescents are interested in having more control over their digital experiences, both over the data they share (Wang et al., 2022) and in understanding where, why, and to whom it is distributed (Stoilova et al., 2020), and over the content that they see. Research on adolescents indicates they enjoy receiving personalized content (Bell et al., 2022), and many see their personalized algorithm content as reflective of who they are (McDonald et al., 2024). They exercise agency online by shaping their social interactions, choosing the content they engage with, managing how they present themselves, and making decisions about interpersonal privacy, such as what information to disclose, what to share, and which content to flag or remove (Stoilova et al., 2020; West et al., 2025), all of which support safety. However, children's agency in digital spaces is closely tied to how well they understand privacy and algorithmic processes, and research shows significant gaps in that knowledge across all age groups (Pangrazio & Selwyn, 2017; Starks & Reich, 2024; Stoilova et al., 2020; Wang et al., 2022; Zhao et al., 2019).

Opportunities for agency are by design. Personalization can support children’s agency by using system transparency, explainability, and flexibility to give children meaningful control over how they engage, as one expert described:

“It’s a continuum ... from some very basic abilities for kids to personalize things ... to more global things like how private is something, how public, how safe is it ... The extreme of personalization is that you’ve got a toolkit and you’re enabling kids to basically change almost any of the building blocks of the application.”

However, several experts suggested that the design of personalization algorithms that focus on engagement for commercial purposes may detract from agency. Research on adults shows that recommender systems that rely heavily on behavioral data rather than on users’ explicit goals or values reinforce short-term patterns instead of supporting long-term learning or well-being (Ekstrand & Willemsen, 2016). Experts also criticized the structure of personalization feeds that limit access to a broad range of content (Reviglio & Agnosti, 2020) and encourage passive consumption (Molem et al., 2024). For example, in the context of using social media, passive use refers to viewing or consuming information without interacting, such as scrolling, whereas active use involves direct exchanges with others and constructing one’s own content (Godard & Holtzman, 2024; Verduyn et al., 2015). Experts emphasized that personalized systems may intensify passive use if users are not able to actively, meaningfully shape what content is delivered or expand the range of choices presented to them.

Personalization and Data Privacy

Data privacy in personalization involves more than protection from harm. It also concerns children’s autonomy and capacity to shape their digital experiences. Personalized systems depend on data collection, which creates risks related to surveillance and profiling. At the same time, some data may be necessary to support beneficial adaptive experiences. The core challenge lies in balancing privacy protection with meaningful personalization, while ensuring that children understand and influence how platforms use their data.

Data privacy sits at the center of debates about personalization because it directly affects children’s safety, agency, and the quality of personalized digital experiences. Personalized systems rely on data collection, raising privacy risks for children. Although experts agreed that access to data is necessary for meaningful personalized experiences, several voiced concerns about collection of data that does not meaningfully shape children’s digital experiences, or that is used by commercial companies for advertising (UNICEF, 2019).

Supporting children’s development requires not only minimizing harm but giving children meaningful influence over data collection and how those data shape personalization.

Children across all ages often have limited awareness of how their data—searches, clicks, and viewing time—inform recommender systems (Stoilova et al., 2020; Zhao et al., 2019). At the same time, platforms rarely provide clear explanations to children or parents about what data they collect or how they use it, and typically present lengthy terms and conditions using inaccessible language, sometimes housed in a webpage external to the platform, thereby creating barriers to understanding for adults as well as children (Schneble et al., 2021). This lack of transparency limits children’s abilities to make informed choices, particularly in systems that involve surveillance, profiling, and commercial data extraction (Molnar, 2016; Pangrazio & Selwyn, 2017). Experts raised concerns about loss of agency when personalization operates invisibly—prioritizing inferred behavioral signals and commercial optimization over explicit goals or preferences—and so risks constraining children’s autonomy and their capacity to provide meaningful consent. Important questions remain around how greater transparency, algorithmic literacy, or design features that prioritize user choice might strengthen children’s sense of control. One expert noted:

“There is a difference we can make to children’s choice making by providing this kind of transparency, by enhancing their cognitive understanding of what it means when their data is being collected and being processed by platforms This kind of cognitive understanding can make such a difference to how they make choices. And if they don’t have that, [informed] choice making will be very, very difficult ... So, it’s really critical for us to think about how we can empower our children, based on what they really need, not just giving something as a kind of tick box exercise.”

Role of Parents, Caregivers and Educators

Parents, caregivers, and educators play a critical role in scaffolding digital experiences for children (Ewin et al., 2021; Sun et al., 2023). Adults can model positive, healthy digital behaviors and provide social-emotional support for children as they navigate digital environments (Choy et al., 2024; Reich et al., 2024). Experts emphasized the importance of adults acting in a supportive role focused on growth and skill building rather than restriction. One interviewee explained:

“We hear a lot from adults that they get put in this position around tech where it’s like their whole job is to be a tech referee: blow the whistle when the kid is over screen time, issue a penalty when something goes wrong, say what’s allowed and not allowed ... But there are many aspects of tech that require more ‘coach’ versus ‘referee,’ ...an adult who

is in their corner, alongside them, strategizing about the thing that's hard that they don't know what to do about, helping them practice and scaffold skill building."

However, both research and interviews highlight important constraints. Many parents and caregivers lack the skills, time, or resources to provide sustained guidance to their child (Livingstone & Byrne, 2018). Experts pointed to the role of platform design in shaping how easily adults can support children's experiences. Current tools for managing personalization, such as parental controls or algorithmic settings, are often difficult to find, complex, or limited to binary choices of whether personalization or content filters are on or off. (Kids Online Health and Safety Task Force, 2024). Similarly, a lack of clear, accessible explanations of how personalization works, such as how algorithms drive recommendations, can make it difficult for both children and parents/caregivers to understand or influence recommendations (Oeldorf-Hirsch & Neubaum, 2023; Rader et al., 2018; Munzer, et al., 2026). As one expert said, *"Transparency doesn't mean that I should be able to recreate the algorithm at home, but I should be able to understand it in such a way that I also have control over it."*

Experts emphasized that parents and caregivers should not be the sole line of defense. Several experts pointed out that child safety in a digital environment is a fundamental right that should not depend on parent discretion, particularly when parents act outside of their child's best interests (e.g., rejecting their children's sexual identity). Rather than placing responsibility on a single actor, scaffolding children's online experiences requires an integrated approach involving parents, educators, government regulators, developers, and children themselves (OECD, 2025).

Implications for Policy and Design

Experts emphasized that improving children's personalized digital experiences requires coordinated changes at both the policy and design levels. While regulatory efforts have focused solely on mitigating harm, meaningful reform would mitigate potential harms while still protecting the benefits of personalization. This kind of reform will require clearer expectations, stronger implementation mechanisms, and child-centered design practices embedded directly into platforms.



We asked experts to consider what changes at the policy and systems level would better align personalization with children’s development and well-being. Across interviews, core concerns and recommendations related to how to shift technology companies from optimizing personalization for child engagement to optimizing personalization for children’s development and well-being. Little research has examined how existing policies and regulations affect youth’s digital experiences, and experts based their opinions on logical connections between what they are observing in the field, such as changes in platform practices and industry behavior, and how these developments relate to current policy efforts. Recommendations for design also drew from their own research and professional experience.

Policy Recommendations

To better align personalization with children’s development and well-being, policy must move beyond risk mitigation and toward child-centered system design. Experts emphasized four core shifts: (1) clarify goals and definitions, (2) strengthen accountability and implementation capacity, (3) align incentives with child well-being, and (4) complement policy with investments in digital literacy.



Limits of Current Policy

The policy landscape is changing rapidly. This section reflects the policy environment as of January-February 2026, when the evidence review and expert interviews informing this report were completed. Subsequent policy developments may change recommendations for policy or regulatory approaches discussed below. However, the broader recommendations are intended to remain relevant across changing policy contexts.

Experts interviewed agreed that thus far policy across the globe has not been effective in ensuring that personalized youth digital experiences foster positive outcomes; rather, some commercial tech platforms continue to use personalization approaches to engage children that prioritize commercial gains, and current policy does not address the complexity of the issue or available tools. As a result, families and schools bear the onus of ensuring digital platforms’ approaches to personalization are sufficiently safe and supportive.

Current policy approaches to personalization in children’s digital experiences draw on privacy, consumer protection, and competition policy. Historically, most efforts have focused on data privacy—how children’s data are collected and used to shape their experiences (e.g., General Data Protection Regulation [GDPR], U.S. Children’s Online Privacy Protection Act [COPPA]). In

this view, personalization is often understood mainly as the use of personal data to deliver content, recommendations, or ads. Another strand focuses on consumer protection, addressing how platforms are designed to influence behavior, not just how they use data. More recent policies, such as elements of the European Union's (EU's) Digital Services Act (DSA) and Digital Markets Act (DMA), begin to combine these approaches by addressing both the use of data and how platforms and algorithms operate.

Within this broader landscape, policy approaches to affect personalization of children's digital experiences generally fall into four categories: (1) data protection and privacy laws (e.g., GDPR, COPPA); (2) design and duty-of-care frameworks that focus on product design and content moderation (e.g., the UK Age Appropriate Design Code); (3) restrictions on specific personalization practices (such as profiling or targeted advertising, e.g., the NY SAFE ACT); and (4) access-based measures such as age gating or platform bans. These categories are not mutually exclusive, and many policies span multiple approaches, but these categories of approaches reflect different assumptions about how to mitigate risks associated with personalization and target different layers of personalized systems.

Recommendations from experts tended to focus on data privacy and access-based measures, likely because these aspects of personalization, particularly data collection and use, are both the most visible and the longest-standing areas of regulation. By contrast, other dimensions, such as how recommender systems prioritize, filter, and sequence content, remain more opaque and are less frequently addressed in policy discussions. Recommendations also reflect that some experts lacked expertise in policy outside of their country contexts. The recommended approaches to policy target different layers of personalization systems, but they vary in the extent to which they address how personalization shapes children's experiences. In particular, many focus on limiting inputs, that is, data or approaches to limiting access to platforms, while placing less emphasis on how recommender systems operate in practice or how they might be designed to support positive developmental outcomes.

Move beyond one-size-fits-all risk reduction approaches to ensure more child-centered personalization. Data protection laws and approaches to privacy vary by country, and in the United States, by state, and new legislative proposals that address personalization are common. Most experts viewed data protection laws such as GDPR in the EU and COPPA in the United States as providing important baseline protections for children, particularly around data collection and consent. However, experts expressed concern that current policy approaches shape youth personalization mainly through one-size-fits-all risk reduction, rather than giving young people meaningful avenues to shape how personalization works for them. For example, beyond GDPR and COPPA, newer frameworks such as the UK Age Appropriate Design Code

(AADC) emphasize the “best interests of the child” and place expectations directly on platform design. Similarly, recent U.S. state-level legislation (e.g., Florida SB 262) introduces requirements related to harm reduction and guardrails for minors. This gap reflects the rapidly evolving and opaque nature of personalization technologies, limited understanding of personalization processes, policymakers’ incomplete knowledge of how children experience them, and the absence of shared definitions or metrics for high-quality personalized digital experiences.

Avoid fast and blunt access-based measures. Experts shared relatively united opinions about the problems with current policy: Overly blunt approaches to a complex problem, particularly those focused on access to specific platforms, are ineffective or have led to unintended consequences, leaving parents or children with the challenge of managing what and how engagement with personalized media takes place.

For example, the ban on social media for children in Australia was just going into effect while we were conducting interviews, and similar bans are under consideration in other countries as well. Virtually all of the experts we spoke to felt that this appears to be an easy, fast solution but not adequate, and that the strict age-gating approach was not likely to provide effective safeguards for children’s experiences. Experts warned that approaches such as blanket bans would hinder children’s ability to adequately develop critical digital skills and build resilience and drive them toward less safe digital use. For example, a few experts noted:

“Children will grow up [to] be 18, and suddenly they will have access to all of social media, but they never grew up building the literacy and how to understand it properly.”

“It’s an illusion that children will never fall into any digital harm ... There are some harms that are good. They are going to experience some sort of harm. Besides digital literacy, the other important component is around resilience. How do we build children’s resilience when they’re in the online space so that they can get up? So, they’ve fallen, someone has bullied them, someone has catfished them. How do they get up and move forward?”

Additionally, accurately verifying age remains challenging. Although age assurance methods continue to improve, they are not perfectly accurate, and children circumvented them, for example, by using another person’s credentials or misrepresenting information. These challenges are compounded in contexts where devices are shared across multiple users or where children experiment with ways to bypass restrictions, reflecting typical risk-taking behavior during development. Because children are likely to find work-arounds to accessing media, families will need to monitor more than they might have prior to the policy. Some

approaches to age verification may increase privacy risks if they require the collection or storage of sensitive personal data, particularly when safeguards are unclear or inconsistently applied. Although some age estimation techniques that draw on data already associated with an account, such as use patterns, may offer a more privacy-preserving, data-minimizing approach depending on their implementation. Moreover, age-based access restrictions remove responsibility for platforms to create safer designs—“we removed kids; problem solved”—as one expert described. Another expert punctuated the risks of such blunt measures, saying:

“[There is] no conclusive evidence from Australia that banning is effective yet. There are lots of evidence or data coming from Australians showing how children are ... working around this banning access situation. Children can always find a way around things. And at the same time, there are subpopulations ... we are taking away the lifeline for many of the children and driving them to those even less safe alternatives or completely isolated from the kind of supporting network that they need. So, taking away something without providing an alternative, and leaving a subgroup out, is not a policy that addresses the actual challenges that we face, and I cannot say I would support any policy like that.”

Access restrictions such as bans have additional drawbacks. Some experts noted that they remove avenues for children to express themselves and participate in political or social movements. Others noted that they can exacerbate inequities by reducing access to beneficial information for some children while leaving the most advantaged better able to navigate consent flows or workarounds.

Strategies such as age estimation, which uses machine learning to interpret a variety of signals already associated with a user’s account (e.g., the types of information a user has previously searched for), may offer a more proportionate and privacy-preserving approach. Ultimately, however, experts were not united in their vision of a more effective approach and provided a broad variety of ideas for viable solutions at the system level related to approaches to regulation, areas to emphasize, and multistakeholder involvement.

Move Beyond Risk Mitigation Toward Child-Centered Design from the Start

Shift to start with well-being as well as safety through design and duty-of-care frameworks. Across our conversations, experts emphasized that current regulations primarily reduce data-related risks but do not reshape how personalization systems operate. Although some existing design and duty-of-care frameworks, such as the UK’s AADC begin to address these issues, experts almost never referenced existing approaches, suggesting uneven awareness, implementation, or lack of effectiveness across contexts.

Experts noted that many current approaches function as a patchwork of solutions that attempt to address specific harms after the fact, rather than shaping how systems are designed from the outset. A more effective approach would focus on the incentives that guide product design—recognizing that decisions about personalization involve trade-offs between competing priorities, including agency, privacy, safety, and commercial interests. A well-being-oriented approach would focus on whether personalization systems actively support children’s cognitive development, autonomy, social connection, and resilience. Rather than asking only whether children are protected from harm, policymakers should also ask whether personalization systems promote developmentally appropriate engagement, foster agency, and expand opportunities for learning and exploration.

Operationalize Standards and Strengthen Accountability

Define key terms and metrics. A central challenge in shifting policy toward ensuring children’s development and well-being is the lack of clarity about what effective practices look like and how to track compliance or alignment, especially when key terms such as *developmentally appropriate*, *agency*, *well-being indicators*, or *systemic risks* remain vague and difficult to measure. To start, there is a need for child-centered frameworks, design standards, and benchmarks to operationalize optimal personalization practices and priorities for children’s digital experiences more concretely. Additionally, these frameworks should include guidance about how to measure practices that enhance well-being. Without agreed upon metrics for well-being outcomes, regulators cannot evaluate compliance, and platforms cannot be held accountable for failing to meet child-centered objectives.

Provide clear guidelines for policy implementation and design. Developing clear compliance guidelines can strengthen policy by translating broad principles into specific operational standards that platforms can apply consistently. One expert pointed to elements of the EU DSA as an example of a more design-oriented approach. The DSA places obligations on platforms to assess and mitigate systemic risks associated with recommender systems, reflecting a shift toward regulating algorithmic processes rather than focusing solely on data collection.

However, broad concepts such as *systemic risk* remain open to interpretation. The effectiveness of these measures depends on clear definitions, measurable standards, and sufficient enforcement capacity. Without concrete definitions of what constitutes meaningful child agency or comprehensible transparency, platforms may satisfy formal requirements without substantially improving children’s experiences.

Article 28 of the DSA offers one example of benchmark guidance as it outlines expectations related to restrictions on profiling children for targeted advertising, greater transparency about

how data inform content feeds, options for algorithmic resets, and risk assessment requirements. However, evidence of its effectiveness remains limited. Questions persist about how reports will be reviewed, what corrective actions will follow identified risks, and how compliance connects to measurable well-being indicators. Policymakers must also evaluate whether these regulations strike the right balance between protecting children and allowing room for innovation in child-focused design, while still centering children's needs in that ongoing evaluation.

Provide resources to ensure policy compliance. Without clear accountability structures, shifts in policies may struggle to produce consistent changes in platform behavior. Experts noted that ensuring policies are implemented effectively requires sustained monitoring and enforcement capacity, including regulators with sufficient technical expertise and resources, and avenues for the public to enforce, such as an independent ombudsman or office responsible for receiving complaints, investigating misconduct, and ensuring that laws and regulations are implemented.

Address Structural Incentives

Reshape misaligned incentives. Experts felt that existing approaches overemphasize data protection, transparency, and access restrictions and do not sufficiently address the underlying business incentives. (As noted above, very few experts were aware of existing approaches to address these misaligned incentives, such as the UK AADC.) Top-down policy and compliance efforts may reduce certain harms but are unlikely to shift design priorities toward child well-being and learning. Change requires attention to reshaping incentives, with a shift away from commercial gain and toward a universal focus on supporting well-being, and incorporating this focus from the initial design phase rather than in backward patches. Consider advertising restrictions for children and creating alternative metrics of success to help families choose resources to use.

Ensure Cross-Cutting Supports

Create more opportunities for industry-government collaboration. Experts called for more clarity in policy debates about personalization, especially clearer distinctions between data privacy and content curation issues, and more precise identification of which specific problems and tools are available to apply to each. Moreover, personalization governance involves normative trade-offs between autonomy, safety, exposure diversity, commercial sustainability, and innovation. A collaborative approach may offer a constructive means to develop more effective policy to shape approaches to personalization of children's digital experiences. It can help establish priorities for the policy, improve understanding of personalization processes,

including benefits, risks, features, and available tools, while also ensuring policies are informed and feasible for tech companies to implement. Specifically, many suggested that more industry-government dialogue would strengthen policy and monitoring, as would increased input from children and research around the benefits and risks personalization offers. For example, as few experts described the challenges:

“It’s been difficult for governments to find a way to regulate platforms, and for the last 20 years they’ve just been increasing and or experimenting with different measures, usually largely without the assistance or the involvement of the tech sector. So, we get a lot of really, quite frankly, dumb laws because they’re not well understood and ... We don’t have enough people who are talking across those boundaries to understand the complexity of the issues and the difficulties of regulation. And we don’t really have ... good co-regulatory approaches where you can rely on the participation of the platforms to address some of those public concerns ... We end up with things like the Australian social media ban, where governments just reach for whatever tool they can get ... in the regulatory toolbox, and in this case, let’s just ban the things.”

“I think there is definitely an opportunity for us to balance those trade-offs, but I think it needs everyone. It needs the government, it needs policy makers, it needs platforms, it needs learners themselves, who have been trained in digital media literacy and understand the importance of balancing the building of resilience and critical thinking, and schools. It needs everyone to ensure that we can maximize the opportunities, because there are opportunities with personalized content.”

Complement policy with investments in digital literacy. Finally, almost all experts noted the ongoing need to ensure sufficient resources and attention to digital literacy for children and parents, while not placing the burden of monitoring digital experiences entirely on families. Approaches should be research-based and embedded in the tools themselves as well as through public information campaigns. Emerging technologies related to AI pose a particular challenge, however. Because little evidence exists about which digital literacy approaches are most effective, policymakers, and educators must systematically evaluate and track the impact of these interventions over time.

Fund and conduct research to examine the effectiveness of policy. There is limited evidence, if any, on whether existing regulations achieve their intended goals. Governments and independent researchers should invest in rigorous ongoing evaluation of policy impacts on children’s digital experiences, including how different approaches affect safety, well-being, and access over time.

Recommendations for Design

Across interviews, experts stressed that design decisions shape children’s experiences as much as formal regulation does, and that meaningful personalized digital experiences require consideration of how personalization works in the user-facing platform design. Many suggestions aimed to address concerns about limited agency, narrow exposure, and engagement-driven optimization. Experts emphasized that many of the benefits of personalization stem from design choices that treat children as a core audience and build systems with children’s developmental needs, safety, and agency in mind from the outset. Experts recommended providing clear and concrete opportunities for children and parents to shape personalization directly and emphasized the importance of using the strengths of each platform to communicate clearly about personalization. Finally, experts stressed that designers must balance children’s preferences with broader developmental and social goals.



Design for children from the start. Experts urged platforms to assume children will use the digital platform and design with children in mind and embed child-centered principles into core products. Existing frameworks for learning and development and design considerations can guide this process.

Enhance Agency and Transparency

Provide meaningful and developmentally appropriate controls. Experts consistently call for clearer opportunities for children and parents/caregivers to express preferences for personalization and powerful algorithmic control. Experts identified several ways to enact these controls:

- **Offer concrete controls.** Platforms should provide concrete options such as topic-level controls rather than vague “more like this” and communicate in language that children understand. Consider an on-off switch to turn personalization on and off or controls to clear or wipe signals used in personalization. Consider careful design of default options, such as opt in rather than opt out of personalization approaches. Consider content-format controls as well; for example, some platforms provide controls that allow users or parents/caregivers to limit exposure to short-form, feed-based content.

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- **Use child-friendly language to engage children in making decisions about personalization.** Consider using the same tools used to engage children in the digital platform, such as a gamified approach or use of videos or songs, and evaluate whether children understand these explanations. One expert provided some detailed suggestions:

“Use the strengths of your platform to convey the information that will help the young user ... use it with agency. So ... for TikTok there needs to be videos to talk about it. For AI it needs to be built into the AI responses ... TikTok should have really popular youth influencers talking about these things ... Because it’s so typical to just be like, ‘yeah, we have that, we have all that material. It lives over here.’”

- **Provide concrete examples of how personalization options will shape their experience** on the digital platform and explain how changing a setting will change the experience.
- **Allow children to opt out of targeted advertising or prohibit targeted advertising to children altogether.** Experts recommended that platforms provide clear and accessible options for children to opt out of personalized or targeted advertising to reduce commercial pressure within personalized feeds and align design choices more closely with children’s developmental needs. Additionally, companies could require disclosure of paid promotions to avoid confusion.
- **Allow for dynamic preferences and personalization approaches** so that children can regularly adjust and reset their experiences, and include periodic nudges to revisit preferences and create good habits.
- **Offer a limited number of meaningful controls.** Personalized learning works best when choice is constrained and developmentally appropriate (Kucirkova et al., 2020). Too many options overwhelm learners (Schwartz, 2004). Provide a small set of meaningful controls.
- **Differentiate controls by age and developmental stage.** Experts emphasized that personalization controls should not take a one-size-fits-all approach. For younger children, more structured and protective controls may be appropriate, including stronger defaults and greater parent/caregiver involvement. For adolescents, platforms might adopt a more graduated approach that reflects increasing agency and autonomy.
- **Consider exposure as both a moderating factor and a design lever.** Experts noted that repeated exposure to similar content can reinforce narrow interests and behaviors over time. Platforms might mitigate these reinforcement loops by intentionally introducing diverse, novel, or countervailing content and by designing features that interrupt continuous consumption, such as pauses.

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- **Support shared decision-making with parents and caregivers where appropriate.** Experts emphasized that platforms could design shared decision points that encourage discussions between children and parents/caregivers to guide children's use of personalized digital platforms. For example, platforms might encourage joint confirmation or prompt a conversation before activation and incentivize children as primary users to set up personalization in collaboration with adults. At the same time, these approaches should not assume that all children have consistent access to parent/caregiver support or make access to digital experiences contingent on parental involvement. Systems should remain usable and developmentally appropriate for children independently, including through age-appropriate defaults and built-in safeguards.
 - **Platforms should communicate clearly with parents and caregivers about available controls** and, where appropriate, provide optional summaries that help adults guide children's digital use. At the same time, these features should avoid creating unnecessary barriers that prevent children from engaging meaningfully.

Align with Children's Development

Address children's developmental needs as well as their personal preferences. Experts stressed that personalization should align with learning and development and provided several concrete suggestions to ensure personalization realizes benefits for children.

- **Use adaptive scaffolding.** Systems should incorporate adaptive scaffolding that responds to learning levels and supports skill development, as this approach produces stronger effects than those focused solely on interests. Systems should align with children's existing knowledge, experiences, and interests. Grounding personalization in children's real-world experiences and knowledge improves comprehension and engagement (Bernacki & Walkington, 2018).
- **Help children to create and express themselves online.** Designers can encourage children to create and contribute to active learning and development and support social connection and identity exploration.
- **Link digital engagement with personalized off-screen activities to support transfer and social interaction.** Platforms can recommend off-screen tasks and collaborative online and offline social interactions and disable autoplay as a default. Linking digital content to meaningful off-screen experiences can help children apply what they learn, promote deeper understanding, and prevent personalization from reinforcing screen-only engagement (Hirsh-Pasek et al., 2015).

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- **Ensure tool usability and interactive support, such as embedded questions, glossaries, and feedback, which can improve comprehension**—but only when aligned with learning goals and when children understand how to use them. Many students ignore digital supports and need explicit guidance (Clinton-Lisell et al., 2023; Shimizu et al., 2024); platforms should ensure that these tools are usable and integrated into the experience.
 - **Balance children’s needs and preferences with broader social goals.** Finally, experts cautioned that personalization for relevance can conflict with goals such as diversity, inclusivity, and exposure to varied perspectives. For example, tailoring educational content to a learner’s interests may increase short-term engagement but limit exposure to challenging ideas or unfamiliar viewpoints that support resilience and critical thinking. Effective design must balance individual preferences with long-term development and widen, rather than narrow, children’s opportunities for learning, exploration, and civic participation.
 - **Improve understanding of exposure and diversity in personalization.** More research is needed to understand how cumulative exposure shapes children’s experiences over time, including how much diversity is enough and when relevance begins to lead to harmful narrowing. This includes examining longitudinal effects across different ages, contexts, and platforms.
 - **Address equity and bias in personalization systems.** Implement regular audits for algorithmic bias, conduct equity impact assessments, and design systems that support children from marginalized communities, for example, by elevating diverse creators and ensuring access to high-quality, relevant content across user groups.

Conclusion

Children’s experiences with digital personalization are multifaceted, as are the challenges. Personalization is deeply embedded into children’s personal, social, and educational experiences. They are using it to learn, to be entertained, to socialize, to explore their identities, and to pursue creative interests. The effects of digital personalization on children’s learning and well-being vary depending on several factors, including a child’s developmental stage, individual characteristics, and level of digital literacy, as well as the design of the personalized system itself. When



personalization systems are thoughtfully designed, they can support children’s learning and well-being through increased motivation, adaptive scaffolding, and creative, curious exploration. However, when designed with time-based engagement and commercial gains as the priority, it presents risks such as narrowed learning opportunities, amplified negative content, covert advertising, and passive use. Children of all ages, but particularly younger children, may be more susceptible to personalization-related harms.

It is not simply a question of “personalization or no personalization.” Personalization has become a critical component of children’s digital meaning making and eradicating it altogether would deprive young people of the most beneficial parts of these digital environments. Ultimately, the findings from this study point to a clear need for all child-facing digital platforms—for learning, socializing, and entertainment—to reframe their approach to personalization and design underlying systems that balance relevance, agency, effort, and diversity in ways that support engagement that is meaningful and developmentally appropriate for all, but most especially for its youngest users.

Although attempts to regulate children’s digital experiences globally have been well-meaning, they continue to fall short as new technologies advance. Because the policy landscape continues to evolve rapidly, the specific regulatory examples discussed in this report should be understood as reflecting the state of policy in early 2026, while the broader recommendations are intended to remain applicable across changing policy contexts. Findings from this review point to key areas where policymakers and designers should focus efforts toward designing more child-centered digital experiences. Policymakers should move beyond focusing on data-related concerns and risk mitigation to advocate for child-centered design that emphasizes well-being, provide clear expectations and guidance to the companies they regulate, and engage industry and children in more opportunities for collaboration to ensure more effective policies are set forth. Designers should embed agency and considerations for child safety into design, increase transparency around data use in ways that young users can understand and meaningfully consent to, and emphasize well-being and, when relevant, learning over engagement. Finally, digital literacy education should be a priority across all stakeholders, including parents and caregivers, educators, schools, governments, and platforms.

Despite the prominence of personalized systems in children’s lives, more research is needed in some key areas, including the long-term developmental effects of personalization and the real-world effectiveness of diversification strategies, transparency tools, and algorithmic controls for children. It is especially important that these gaps address diverse sociocultural contexts and children with varying needs and abilities.

Debates around children’s digital experiences will continue to evolve, but personalization will surely remain a defining feature of children’s and all of our digital environments. The recommendations outlined in this paper are in many respects aspirational. Reorienting personalization toward children’s development and well-being requires rethinking long-standing approaches. Yet meaningful change demands ambitious goals. A child-centered approach grounded in children’s development and well-being offers a path forward not by eliminating personalization, but by reshaping what it is for, how it works, and who it serves.

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Appendix

List of Participants

This list includes only participants who consented to have their name and/or affiliation attributed.

Brian Ausland, Partner and Director of Education at One Learning Community

Garvin Brod

Carleton University*¹

Linda Charmaraman, Senior Research Scientist and Founder and Director of the Youth, Media & Wellbeing Research Lab at the Wellesley Centers for Women, Wellesley College

Ranjana Das

Katie Davis, Professor and Interim Associate Dean of Academic Affairs at the University of Washington (UW) Information School and Co-Director of the UW Center for Digital Youth

Allison Druin, Professor Emerita at the University of Maryland

Carla Engelbrecht

Jerry Fails, Department Chair and Professor in the Department of Computer Science at Boise State University

Mizuko Ito, Professor in Residence and Director of the Connected Learning Lab at the University of California Irvine

Phakamile Khumalo, Programme Manager of Public and Media Skills Development at Media Monitoring Africa

David Kleeman, Senior Vice President of Global Trends for Dubit

Natalia Kucirkova, Professor of Early Childhood Education and Development at the University of Stavanger

Monica Landoni, Senior Research Fellow at the Faculty of Informatics, Università della Svizzera Italiana

Sun Sun Lim, Vice President of Partnerships & Engagement and Professor of Communication and Technology at the Singapore Management University

Sunny Liu

Brian O'Neill, Emeritus Research Fellow at Technological University Dublin

Manisha Pathak-Shelat, Professor of Communication & Digital Platforms and Strategies and Chair of the Centre for Development Management and Communication at MICA, India

Nimmi Rangaswamy, Professor at the Kohli Centre on Intelligent Systems at the Indian Institute of Information Technology, IIIT, Hyderabad

Douglas Ready, Professor of Education and Public Policy and Director of the Consortium for Policy Research in Education at Teachers College, Columbia University

Mitch Resnick, LEGO Papert Professor of Learning Research at the Massachusetts Institute of Technology Media Lab

¹ * indicates that the expert chose not to be identified by name but consented to listing their institution

Nicolas Suzor, Associate Professor of Law at the Queensland University of Technology (QUT) and Chief Investigator of QUT's Digital Media Research Centre

Robin Ungruh
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Chikezie E. Uzuegbunam, Senior Lecturer, Master's Programme Coordinator, Research Forum Chair, and Deputy Head of School (Research) in the School of Journalism & Media Studies at Rhodes University



Center for Children and Technology
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