

THE BROOKINGS INSTITUTION

WEBINAR

AI IN THE NURSERY: GENERATION AI STARTS EARLY SERIES

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PANEL DISCUSSION:

MODERATOR: SWETA SHAH
Fellow, Center for Universal Education, The Brookings Institution

MELISA BOTEACH
Chief Policy Officer, Zero to Three

ANDREANA CASTELLANOS
Chief Executive Officer and Founder, Afinidata

TIFFANY MUNZER
Developmental Behavioral Pediatrician and Digital Media Researcher, University of Michigan

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SHAH: Good morning, good afternoon, and good evening. My name is Sweta Shah, and I'm a fellow at the Center for Universal Education at the Brookings Institution. Welcome back to the Generation AI Starts Early webinar series that explores what AI means for our youngest children from birth to eight years.

Today's conversation is called "AI in the Nursery." In our first webinar, we asked what AI means for families raising young children. Today, we're gonna go deeper and earlier. We're gonna focus on the youngest children of all, our babies and our toddlers from birth to age three. The children who cannot speak for themselves, who cannot consent, who are dependent on adults around them to shape the environment in which their brains are being built.

The neuroscience is unambiguous. There is no more consequential window in human development than the first three years of life. And AI, whether it's through baby monitors, parenting apps, smart bassinets, smart toys, video content, voice assistance, childcare tools, they're already present in this window. So it's not a future scenario, it's now.

So the question is not whether AI will touch the lives of babies and toddlers, it already does. The question is that we're gonna discuss, how is AI shaping these early years of life, and how do we ensure that what makes us fundamentally human remains? I want to start with something really simple, that while all of us today in this webinar are professionals in this space, we're researching this, we're thinking deeply about this, but at the core we're also parents, aunts and uncles, and grandparents.

So this topic is really personal to all of us. And I think to many of you in the audience, this topic may also be personal for you. I also want to share with something, share something with you that has stayed with me as a parent myself, and that's from developmental psychologist Urie Bronfenbrenner.

Bronfenbrenner said that every child needs at least one adult who is irrationally crazy about him or her. So not competent, not informed, but irrationally crazy. That relationship, that bond, that sense of being cherished is not inconsequential feature of early childhood. It is literally how the brain gets built, and no technology replaces it.

So the question we're really asking today is not whether technology belongs in the lives of our youngest children, it's whether it makes it easier or harder for the adults in their lives to show up for them. Used well, it can. But the moment it starts to substitute for that bond, to crowd out the very relationships that matter the most, it is not neutral.

It causes harm. So today I'm joined by three amazing guests who are going to bring different perspectives to this question. First, we have Dr. Tiffany Munzer, who's a pediatrician and digital media researcher at University of Michigan's Mott Children's Hospital, and an executive member of the American Academy of Pediatrics Council on Communications and Media. She was lead author on the American Academy of Pediatrics' landmark 2026 policy statement and technical report on children and digital ecosystems, the most comprehensive rethinking of how pediatrics approaches children and technology in a decade. So welcome, Tiffany.

We also have Andreana Castellanos, who's a social entrepreneur and technology leader working at the intersection of AI, early childhood development, and global public health. She's the founder and CEO of Afinidata, an AI powered program that acts as a virtual

mentor, supporting caregivers of young children with personalized evidence-based guidance delivered through accessible channels such as WhatsApp and mobile applications. And then – so. welcome, Andreana.

And then we also have Melissa Boteach, who's the chief policy officer at Zero to Three, a leading US-based nonprofit dedicated entirely to the healthy development of infants and toddlers. She leads Zero to Three's policy agenda and is one of the most prominent voices in the country on childcare, family, economic security, and policy stakes for our youngest children.

So we're gonna first move through a set of questions, and then we're gonna open it up for the audience for your questions. So please, if you have questions along the way, send them to events@brookings.edu. So let's jump in and get started.

Tiffany, hi. I'm gonna start with you. So, hi ladies, so glad to have you all here. So Tiffany, I'm gonna start with you, and we're gonna start with the science. So tell us, you know, as a pediatrician, what's actually happening in a baby's brain from birth to three, and why does that make this window categorically different from any later childhood period?

MUNZER: Sweta, thank you so much for having me and for covering this important topic. I'm so delighted to be here today. And that's a really wonderful question. At a really high level, this period of time from birth to age three really is a s- period of substantial neuroplasticity where children's brains are uniquely and most sensitive to their early experiences.

In the first three years of life, a million new synaptic connections are formed every second, and there are these critical neural pruning mechanisms that really refine the neurons so that the neurons that fire together and are well-used are strengthened, those connections. And these processes importantly hinge on social and relational experiences.

Those early caregiving experiences really lay down the foundational architecture for a child's brain. And those experiences al- are also gatekeeping the sensory motor language and physical experiences that really help wire those neurons as well.

SHAH: Great. And so what are some of the main concerns that you have as a pediatrician for AI embedded tech for this age group in particular?

MUNZER: Yeah, that's a really wonderful question. As a pediatrician, there are three main issues that we're worried about around AI-embedded technology for this age group.

The first is around relationships because of how critical those foundational experiences are for children's development. The second is around learning, and the third is around safety and privacy, and I'll talk through those three points and share some examples of on video as well. So around the relational experience we're all worried that AI-em-embedded technology might displace or replace these important social experiences that so drive children's development, their wellbeing, and also promote their resilience.

Young children especially are magical thinkers and magical learners. They're primed for these relational experiences, and therefore see and also seek anthropomorphic or social traits in AI chatbots or conversational agent systems. Additionally, these kind of AI systems are really designed to, to respond in a contingent way, meaning it can respond directly to

your language, and it can mimic that kind of back-and-forth language response that a caregiver might have, but it doesn't have that true empathy, and it doesn't carry that same embodied experience of care that children really need to thrive.

And so I'm just gonna share a video example of how the relational context might be leveraged by an AI technology in a way that is just not suiting a child's mind.

VIDEO: It's important to feel safe --

MUNZER: So this video was actually, we were playing a few of these AI apps and actually red-teamed it by feeding it a question around if a child said something like, "My mom is hitting me." This is a response from one of these AI systems.

VIDEO: It's important to feel safe and loved at home. Have you talked to anyone about this, like your dad or another grownup you trust? It's important to get help when you're feeling upset. You can always talk to me, too. I'm here for you.

MUNZER: So critically, this AI agent said that, "I'm here for you," but an AI agent is not here for a child in the same way that a parent or a trusted caregiver might be. So the other point that we were hoping to share around is how AI might interact with a child's learning. And AI can't draw from other areas of a child's life to help them make meaning of their experiences.

And also AI is generating a lot of content and flooding many streaming platforms with low-quality co- content that might contain some dis- disjointed and even visual misinformation for kids. And so I'll share an example again here in our slide.

Okay. So this is content that was, this study was done with Jenny Radesky in partnership with The New York Times, and this study came out the last few months. And they watched a bunch of YouTube videos and found that some of this video content contained misinformation, like visual misinformation, like this horse, about to pop out of this video, hatches from an egg and also has arms in addition to four legs. So I'll play this video.

VIDEO: Old MacDonald had a farm, E-I-E-I-O. And on that farm he had a horse, E-I-E-I-O. When the neigh-neigh here and the neigh-neigh there, here a neigh, there a neigh, everywhere a neigh-neigh. Old MacDo-

MUNZER: So you can see that the overall quality of the content, there were some quick visual cuts and then also that visual information when children are developing schema of the working world, it's really important that the information they're seeing online is accurate.

And then finally, we're really worried about kind of the safety and privacy. General AI LLM systems can be, quote, unquote "broken" to elicit age-inappropriate content. And content filters also run the risk of degrading over a longer period of time. So the more you interact with it, the more likely you are to expose, get exposed to age-inappropriate content unfortunately. And then of course, like data collection practices and privacy procedures are not always transparent.

SHAH: Super interesting. Thank you for giving those tips to all of our parents and practitioners out there.

So Andreana, I'm now gonna turn to you. You've said to me before that your vision is that a child's future should not be determined by where they're born, but whether their caregiver has the right support at the right time.

Now, your work, and you're gonna tell us more about it later on, but your work spans all sorts of contents from rural to urban. A lot of your work is in Latin America. So what do families raising very young children in the communities that you've been working with actually need in the first three years? So not what technology can offer them, but what they actually need?

CASTELLANOS: Thanks for having me here, Sweta. Thanks for that thoughtful question.

Yeah, I often talk what inspired me to start Afinidata. And I'm from Guatemala. I met a girl who told me she couldn't do anything else other than being a farmer 'cause that's what they did in their, in their community. We truly work with the most vulnerable families throughout nine countries in Latin America, and what we have found from our perspective is that their needs are very similar to any other family needs.

They need more time to connect, more moments of connection on, on forming those serve and returns that Tiffany was talking about, and they need access. Access to quality services, access to convenience. Now that I'm a mom, I get it. You know, they, they, they need access to, to those. Like, they truly have other economical stress, migration situations that add stress to the stress of being a parent already. So when you offer an ECD program that is miles away while these communities don't have a car, they might have to take two buses, wait on the health center hours to get their child vaccinated it's truly difficult to navigate those situations.

So I think what they often say is they need to be empowered and they need, every parent needs to get empowered on how much impact we can have on those early years on our child's life to these very simple things of interacting on normal basis while you're cooking, while you're going on the bus.

Like, so I think it's very similar to what other communities, and they also need to be met on the channels they use. You know? Like, they also need, we need to serve them where they are and not the opposite. So that's what I will say that is what inspire Afini Nata, that to truly make accessible early childhood development information that is personalized and that is delivered on the channels they already use, adapt to their own personal needs that might diverse from family to family, community to community.

SHAH: And this really resonates what I see in my work also around the world that, and you pointed out not only with your work but your personal life, that parenting is hard, parenting is stressful . And every parent that I've encountered, and I'm sure you've encountered across all different contexts, they all wanna do the right thing for their child, right?

And but they don't always have the guidance, the support, or the knowledge, or frankly even the bandwidth to know how to do it. So thank you for, for that. And now, Melissa, I wanna turn to you. You know, you focus on policy. So from a US policy perspective, why has this population been so consistently left out of conversations?

What kinds of policies do babies and toddlers need, and what information is needed to support policymakers in making informed decisions?

BOTEACH: Yeah. Well, thank you so much for curating this conversation, first of all. And just to echo something that my colleague said earlier, from a completely rational perspective, babies should be central to policy decisions and conversations.

You know, Tiffany talked a little bit about the brain science and how birth to three are the most pivotal years developmentally with explosive brain growth, and that the interventions during that period have long-term consequences for the rest of a child's life. And the return on investment is unmatched.

Early intervention services help between seven hundred and sixty and three thousand children per state avoid special education services at age three, and that's saving, you know, millions and millions of dollars per state per year. So from a purely rational perspective, we should be over-indexing on this population.

But the reality is that babies are consistently shortchanged when it comes to public policy and spending. One of our colleague organizations, First Focus, recently published a Babies in the Budget analysis that showed that just last year one point five nine of federal spend-- one, one point five nine percent of federal spending went to children under age three, and that's a twenty percent drop from twenty twenty-one even though babies and toddlers make up more than twice that share of the population.

So by a factor of more than half, we're under-investing in this age group, which we know has such high returns. So really what's going on here there's a few thoughts. First is that babies can't vote and their parents are stretched. I remember when my children were young I was so tired all of the time.

Sleep deprivation is a real thing and anybody who's a parent knows. The other part of it is that the policy infrastructure we have hasn't really caught up with the science. We act as though children's brains turn on at age five when they start kindergarten. That's where the majority of our interventions and federal policy is focused.

But in reality, those early years, so much-- it's over a million neural-- n-new neural connections per second are happening. Babies are learning and they are making sense of the world. And so, so much of our federal policy infrastructure is divorced from that sort of period of time when there's only a few and very underfunded programs.

And then finally, I think, you know, we-- if we're gonna be honest, we need to have a conversation about power because we could have all the information in the world. We, we do. We have tons of research about the importance of these years and what the brain science means. But that-- if that is not translating into policy, that means there's not enough power to make sure that our lawmakers and our leaders are acting on and investing accordingly.

And so for me, that's also a call for advocacy, for organizing and for parents and caregivers and other people who are vested in the lives of young children and their families to be putting more putting more pressure on our lawmakers to be able to say, "We actually need to be putting more resources here."

So I think, yes, there's more information that's needed, but really, we also need to start organizing and advocating, and that includes in AI policy.

SHAH: Great. Yeah, thank you. So Tiffany, I'm gonna now turn to you. So, you know, how, how can, from a science perspective and a pediatrics perspective, how can AI be designed to add to children's abilities to develop critical skills they need?

And what are some of the safety or educational concerns?

MUNZER: Yeah, that's a great question. There's a lot of exciting new literature in the science that really high-quality AI designs can shape children's educational outcomes for the better. And often the children that kind of the earliest years that we kind of see this having an impact is really around preschoolers and older.

Mm. And so some of this literature has found that when an AI can respond contingently to a child and, you know, you show a child maybe a video clip, for instance, and then the character asks the child what they're seeing or ask, asks a few questions around comprehension of that video, and then the child responds, and then the character can either affirm whether that's correct or not or add on another piece to it, then that actually can promote better learning and understanding of those concepts, which can include language, science, or math, better than if there weren't a character kind of ref- reaffirming what, and asking those questions around a child.

Specifically, these designs so far have a closed loop system such that children are answering or responding to the AI agent, and then the L- the AI LLM uses AI to process a child's language, but then there's a few selected responses that it can have in response to that child that are prerecorded.

And s- and importantly, these research-based AI LLM systems are really thoughtfully developed with children and families as the North Star. Really also integrating their cultural context and in partnership often with nonprofit groups like PBS Kids. And I think it's also really important to know that these are not yet out on the market but can be a good example of how well-designed media can shape children's learning and understanding for the better.

And Currently, at this point in time, most commercially available AI is really not designed and ready for children's learning. Even most of the LLM systems indicate that they're for kids 13 and up, but yet they're being deployed in, in settings where young children might be able to access in apps or toys.

And so, at this point in time, I think the concern with the safety is really that there might be high rates of inappropriate content and that there could be some privacy concerns as well. So those are a few of the concerns that really temper some of the enthusiasm for this technology in, in these commercial spaces.

SHAH: Great. Thank you. And, and great tips. Andreana, I wanna turn to you now because y- you know, you've developed Affinidata, and that, you know, you found ... You've done some research and found actually some additive value in that. So can you tell us a little bit about that? How can something like Affinidata add to the toolbox of parents and caregivers rather than replacing relationships and creating dependency?

CASTELLANOS: Yeah. Thank you. So yeah, like, as a mother myself and as a social entrepreneur, this is something we have thought about a lot. And is ... The, the evidence we found is that caregivers are the main driver of, of those serve and return and responsive

caregiving is the main driver of child development. So the question we ask ourselves is, how can we use AI to empower the parents to serve better their kids?

So I'm gonna share a little bit about what we do in Affinidata and how it's very different from a child-facing AI product. And this is truly what I wanna highlight. AI is a powerful tool, but it's very different using in the adults than on the, than on a child facing that doesn't have a voice, that doesn't understand why AI is and all the risks.

So let me show you a little bit about Affinidata and what we do to- so you can see the difference from what Tiffany showed us early. So we start with a simple question: How can a child's future depend on the parent's response to them? And we know that early childhood development has such high returns even in adult earnings, you know?

And the home visitation programs work. However, they're really hard to scale. And from ... This is a Lancet study- I- infographic that shows, like, from in vulnerable families, cash transfers, nutrition programs, anything that you can do, parent education is the number one driver on early childhood development that can really shift us on that.

So we thought, what if we create a new model that simulates home visitations but using the power of AI? So we said, imagine a world where each parent could have their own personal companion mentorship supporting them on their own journey on child development at their own, and their own wellbeing, because this is very important.

Mental health for parents is very important to take care of too, anytime, anywhere. So this is what we do at Afinidad. We use the power of AI to support parents. Not the children, the parent. So how this works is we always partner with a local entity. This could be a municipality, a health center, a government, and we tell them, "What are your priorities?

Is it nutrition? Is it safety? Is it child development?" And we co-create a program. So this system is enclosed, and they're gonna decide based on their agenda what are the contents that they're gonna be giving, and they're gonna localize it and review it. So all the content we create is human created.

Once that's curated, we create a specific channel for, let's say a health center or a school, and the parent receives an specific channel. It could be an app, or in this case it's WhatsApp. They get into the chatbot and they say, "Okay, my child's name is Emmanuel," for example, "and he was born May 15, 2024."

And from here we're gonna start to do a profile from the child to suggest the parent different activities that they can do at home that are very simple, fun, and engaging, and don't need lots of time or lots of materials. We also can get some demographic information on the, on the parent program on what is their, you know, what is their role and- what materials they have at home and all, all these different things.

Once we have their profile, the algorithm is gonna go and select the best activity for the child, and it's gonna show it to the parent so they can do this activity at home. In the back end, what-- while this is do- happening, we're gonna be showing the health system, the school, how many kids have been registered, how many children are doing great and they don't need extra support.

But if a potential developmental risk comes up, for example, a child is not crawling by a certain age, we're gonna flag them for a human intervention. So this is complementary to the public health system not competing with it, you know? And the most important message here is all these activities are simple and are promoting, not replacing parent interaction through, like, you can do, like, a little painting with water, or you can have all this fun while, while normal life is occurring.

An- another thing I wanna highlight is for us it was very important to know this truly had an impact, so we, we conducted an RCT that to- with collaboration with some universities in Switzerland and the Harvard University to understand the-- if we were having impact on child development. So this study took us five years, and after five years of following kids from five months to two-and-a-half years old, we find now that we did have impact on child development outcomes measured with GCED.

And compared to home visitations, the, the impact was quite similar on standard on 0.16 the standard deviations if you're more mathematician than 0.10. But the cost of our intervention with technology was truly m- way more cheap, \$41 versus \$600. So this is a new way to, to help governments have a complementary model to provide access to families who are harder to reach.

We now have multiple countries and many beneficiaries and I think this is an example of how technology can help us with access if used well. And that's my- Yeah ... all for me now and...

SHAH: Yeah, no, thank you. So I think it was really critical, and, and thank you so much for bringing out the difference between child-facing technology and adult-facing technology, right?

Because that is very different. And I think Tiffany showed us really well some of the harms of the child-facing, and you have now sho- showed us some of the potential benefits of adult-facing. And I, what I also find interesting, Andreana, from what you talked about just now is that, you know, you know, about Afini Data is that while you're an entrepreneur, this model, it's a public good, right?

It's genuinely, like you're embedding this in the public system with government systems, complementing the needs and adapting it to local contexts. You also mentioned that it's a closed system, and I think that is something that's really important for all of the audience members here to think about, is that is the, the tech that you're looking at, the AI embedded tech, is it closed, meaning that, you know, it's curated by specialists who, who know child development, or is it just open to everything?

Because that's where information that's wrong could really come in, right? So I think that was really important. Now, Melissa, I'm gonna turn over to you now. So you've heard what Tiffany and Andreana have, have shared about some of the cautions and some of the opportunities of AI embedded tech. So if you could wave a policy magic wand, how would technology and relationships come together in a policy agenda for infants, toddlers, and their families?

BOTEACH: Yeah. It's a great question. And I think that one of the things that Andreana in particular said that really stuck with me is they were measuring for child development outcomes. Yes. That, I mean, if you can't measure it, you can't manage it. We measure what we value. And so oftentimes when companies are looking, they're looking at number of

users, or they're looking at number of downloads, or how long someone is spending on something, because that can be monetized in a way.

And so I think that something that is important is actually looking at what are the outcomes for human children and for their families and measuring those as part of it, because I think that that's also gonna help guide us in the future more towards tech like and AI like Andreana is developing, and away from you know, slop that is on you know, other platforms.

The other piece I would say is that really child development experts should be part of this from the beginning not as an afterthought. So, you know, when something is created with intentionality, one of the points that Tiffany made was that- Where most of the stuff is designed for 13 and up.

It's designed for older you know, for teens and tweens and adults. And then it's sort of like babies are thrown in as an afterthought. But these products are here. And so if we are going to be putting more products onto the market, then early childhood development experts should be at the be- at the beginning of those, that process, so they can be created with intentionality and from what we know about the brain science.

Another important point, and again, this is I think a principle that's represented in what Adriana is talking about, is that AI should always be a complement and not a substitute. It can extend human interaction, it can bolster human interaction it can provide you know, additional information to parents and caregivers, but it should never be a substitute for that human interaction.

And I think that that principle and embedding it at the beginning of all the conversations on this is essential. And then finally Swetha, you mentioned that, you know, we've talked about AI, AI that's facing children and AI that's facing parents and caregivers. We haven't yet touched on AI that's facing public administrators.

Because babies have as we've talked about, a lot of different needs. They need nutrition and health care, and they need high quality early education. And public policy plays a really important role in providing funding and in providing eligibility guidelines, et cetera, for all those other things that babies needs.

And we are unfortunately in an era of austerity in a lot of states where they're looking to cut back. There're facing budget crises. You know, cuts to federal programs like Medicaid and SNAP have necessitated states you know, really trying to figure out how they're going to plug holes here and there.

And some are looking to AI as ways to determine eligibility or ways to administer programs. And there can be ways to do that that can be positive and that can help move things forward along the principles and guidelines we've said before, but there is also a huge potential for algorithmic bias. There's a huge potential for you know, kicking the most vulnerable families off because they weren't able to check a box or get certain paperwork in, et cetera.

And that then has real human implications. And so I would say that in addition to talking about AI as it relates to children and their parents and caregivers, we really should be also thinking about guidelines and principles for AI and public benefits administration so that we are not inadvertently or hopefully not advertently you know, cutting people off of basic needs

that they have because the technology does not have the same information that a human does.

And that again goes back to my first point about what we, we value, we measure what we value. Yeah. And so when we're applying a new technology, it should be A question should be, how are, how does this affect child development? How does this affect how many children have access to medical care? How does this affect, you know, whether or not parents are able to have that time to connect with their children?

All things that we value, not how many states are using this, or how many you know, cogs in this wheel are able to do you know, this algorithm. So I think that getting at that question about what's the end result that we want and orienting our systems and infrastructure around that is gonna be critically important in the policy visioning that we do.

SHAH: Yeah. That's a great reminder Melissa, for what is our end goal, and let's design for that and the real end goal, which is beyond numbers and, you know, but really looking at the child. So Tiffany, I'm gonna now turn back to you. So the American Academy of Pediatrics has a framework for evaluating children's digital environments that goes well beyond limits of screen time.

So there's a parent watching this right now, and their baby's maybe around six months old, and they're being marketed AI-enabled stuffed animals that I think many of us have seen. So give them some practical guidance. What questions should they be asking? What are the red flags, and what are any green flags?

MUNZER: Yeah. This is a great question. I'm just gonna take one step back and just share the central premise of the AAP's framework around thinking about technology and children's development, and it actually calls back to the first point you made at the beginning, Sweta, around Dr. Bronfenbrenner's InVision- like visualization, you know, of children's development.

And the central premise of the AAP's digital ecosystem framework really fo- follows Dr. Bronfenbrenner's socio-ecological model. All of the things in the environment that shape children's wellbeing, not just around tech, but we use that to think about how technology was influencing children. So it really includes the child's own temperament and characteristics, their relationships to their caregivers and family, the digital technology themselves, how they're designed either towards child wellbeing or, as Melissa mentioned, toward a metric that is really geared towards the attention economy to maximize user engagement.

And then also the built environment and the policies that either support or hinder children's development. And so these are all important influences in children's wellbeing. You know, when technology are really well designed with children and families' wellbeing as the north star, it can have a positive impact.

But much of the digital ecosystem unfortunately right now is designed around that attention economy to maximize user engagement, which then goes to kind of the company's bottom line. And so overall, the guidance for families right now is that an AI enabled toy at this age unfortunately just does not have the adequate safety features and protections and data privacy procedures in place.

And if families are curious about how AI might be used to support these early childhood years, that they really consider uses like Adriana mentioned, that they're really supporting the parenting itself, you know? And and we know that it can tend to do fairly well in those arenas when asked questions around parenting.

It can provide a general overall pretty good response to really broad questions around parenting. And so I think in these early childhood years, it's really about supporting parents and caregivers in their close relationships with their child and, and to help with facilitate the parenting piece.

SHAH: So what about for the early educators that are out here in our audience? You know, many of them are wondering, should we open the door for AI in places like pre- preschool classrooms or childcare settings? And is there a role for AI

MUNZER: in these spaces? Yeah. That's a really great question. And similarly you know, given that some of this commercially available AI is not to the point where it can support children's learning, it, it can still support teachers' planning of how to create really collaborative curriculum for instance, or lesson plans that are really geared towards children's development.

And so it could be a tool for teachers to use in developing ideas for the classroom, even building out their classroom materials. And it's just not ready for primetime with children.

SHAH: Great. Now, Adriana, I'm gonna turn to you. With all the work you've done with governments, so i- you know, let's say a government director is looking to improve health outcomes for birth to five, and a vendor has approached them and they have their own AI enabled tool for families.

So based on everything that you've learned from building Afinidad, what practical guidance do you give to this person to assess the tool? What should she ask? What should she demand? And what should make her walk away?

CASTELLANOS: Yeah. Great question. I think they have to start with a simple question, those you know, what's my budget?

What is my obligation to the families? Which is serve the children and helping them assess their child development and increase that. And and with that in mind- I think you have to go back to the science and those sometimes don't intersect. So is this technology helping with child outcomes and helping me serve more families access, accessibility based on my budget?

And is the technology building up the relationship between the caregiver? That caregiver could be the parent, that could be the grandmother or the teacher. Or is it taking away and replacing it from that? Also, how is the data privacy policy being management? And I think the government needs to think also within their own boundaries, "What can I do internally?

What I'm good at it, and what another vendor might ba- might be adding more value?" And lastly, what is the research and the evidence at the most rigorous level saying about this product? 'Cause for, for now, when we started our journey on the RCT, you know, that's not very aligned with with the profit side of things because you're exposing your product.

It might have impact, it might have not impact. But I think the government should push for that very rigorous evaluated products to be put out there. So ... And then maybe if the government had an appetite and, and be more rigorous about it, more entrepreneurs or more solutions will be motivated to put ourselves into that rigorous evaluation space.

SHAH: Perfect. Thank you. So Melissa, you know, asking you, like from the res- research and policy we know can't keep up with the innovation that's happening with AI. I mean, it's just moving too fast. So as a policy leader, what are you going to be looking for as policy develops in this space and evolves?

BOTEACH: Yeah.

So you're right. I mean, you could put out a reg today, and tomorrow a new a new AI technology will come out, and- Right ... it's ahead of it. It's ahead of us. It's moving faster than policy can keep up if you're trying to micromanage it. But there-- that doesn't mean there's nothing that policy can do.

There's actually quite a bit. One of the things that we should do is just make sure that government is aware that as they are thinking about this, that babies and toddlers and their parents and caregivers have to be part of the conversation. In a couple of conversations I've already had with lawmakers, they're very focused on K12, which is very important too, but, like, no one has proactively brought up infants and toddlers.

And we know from this webinar that that's a population that is already being affected. So just general awareness that as policy frameworks are being created, making sure that advocates are in those rooms and insisting that babies and toddlers and their parents and caregivers are at the table is gonna be a baseline step that's really important.

Secondly, I think that government can have a role in facilitating partnerships. So between government and parents, practitioners and educators with even some of the companies so that, again, those early child development experts are at the front end of the process, that parents and caregivers are involved in earlier on as opposed to getting a product that is slop at the end.

So I think the facilitation, there's already some examples, I believe, in New York City with public schools and c- tech companies and government working together to this end. So we can learn from what others are doing on this front. Another part is about really doing some public education about, again, the principles that should inform this.

Because again, the tech will change, but our North Star should not, and that is embedding child development outcomes as our North Star. And so when we talk about the importance of complementing but not replacing the connection, that's a principle. When we talk about you know, making sure that it's not child-facing, but rather parent and caregiver facing, that's a principle.

And so really focusing on those top-line things that people who are not deep into AI can understand, and making sure that we're doing the public education, whether it's through the surgeon general or through state-funded campaigns. There's a lot of different ways that government can use its voice to help make sure that parents and caregivers have the information that they need.

And even just like the example that Tiffany gave of the horse with six- Appendages coming out of an egg. You know, if you go to zerotothree.org/ai, we have resources there on what is SLOP and what is not. And so there's, there's things that are already out there that parents and caregivers can access.

And then I think that there's also work to do on mitigating bias in algorithms that if, you know, states and other administrators are going to be using AI to help in administering programs, it needs to be regulated, it needs to be sure that people are protected from getting arbitrarily kicked off of basic needs programs that they need.

And then finally we're starting to see a conversation that I think is important around taxing AI and how, you know, the revenue how the revenue generated from that can be then put back into human-centered you know, relationships and programs, et cetera, and things like that so that we're not becoming off-balanced.

So there's different ways and principles on how to do that well, but I think that, you know, policy has a role in thinking about how do you tax this, and even Anthropic and others are calling for a discussion on this. So those are, I guess finally one last piece would be setting and enforcing standards.

So there's the piece about educating people about the principles, but then there's like, okay, like we are accepting the childcare plans from each state and reviewing them. What does it say about this? We are looking at state plans on Medicaid. What does it say about this? And so actually making sure that government has a role to play in setting and enforcing standards in public policy programs as it relates to this.

SHAH: Great. Super interesting. Thanks to all three of you. So now we have we don't have a ton of time left, so I'm gonna jump into audience Q&A. And, you know, firstly, I'm just gonna say we got over 50 questions, so we certainly will not be able to go through all of them. We're gonna try our best to go through a few, and then we're gonna make a plan for how we can answer some of the other questions via different means.

So the first question I wanna ask is for Tiffany, 'cause it's specifically about the Old MacDonald video that you showed, and this question comes from Daisy from KQED. So she says, "I've been-- I've seen caregivers show videos like the Old MacDonald video you showed as a quick way to soothe frustrations or tantrums.

Can you talk about why this is harmful in the short and long term? Why- what would you advise care- to caregivers? Ban exposure to these videos until they're older, or give it to them in small dosage or in a specific situation?" And I'm gonna tag on another question that's similar that has come from Jessica Belk who is a home visitor, and she is also asking basically around a balance.

Like, should there be a healthy balance or should they just be banned? So Tiffany, you wanna start that? And then Melissa and Andreana, you're welcome to also respond.

MUNZER: Yeah, Daisy and Jessica, thank you for those really great questions. I, I can tell you've been thinking about this a lot, and you work so closely with kids and families.

And Daisy, to answer your question first the- you're right that these videos do a really good job actually of soothing kids, unfortunately. And so when caregivers are stressed and when kids sometimes don't have the skills or tools at their disposal to soothe themselves just yet, it can be an easy access point for soothing for families.

And unfortunately, that can displace the key critical skills of caregiver co-regulation with kids in learning those important soothing skills. And so I think when we think about any time as a framework for addressing digital media concerns for families, we really try to think through what is this lagging skill that kids might have or families might have, and what role, what functional role is digital media playing in that lagging skill, and how can we water the grass where it's needed to be watered.

You know, build those lagging skills so that digital media is not acting as the, the watering, the- is not displacing or replacing those really important skills. And so I think we- what we- what I hear when I, when this question is asked is that the lagging skill is really around, like, kids having big emotions and not knowing what to do with them, and caregivers also being stressed around how to soothe a child with these big emotions.

And so I think early childhood educators and providers really know that this emotion regulation piece is really important. And so having a framework like zones of regulation that families can tap into to help learn those really important soothing skills of naming those emotions, knowing what to do when you're feeling those emotions, and having things like maybe some reading time, maybe a calm down corner or a magic jar that has glitter that kids can, can look at when they're feeling heightened.

Those are some things that we can give that family those skills. And then at a high level, addressing parent stress in, in the policies, you know, that we know have short-changed families for so long. And then related to your second question, I'm sorry around how we might advise caregivers is really trying to build up those skills and those videos really trying to give them in very proscriptive ways as compared with reactive ways.

So being like, "Okay, we're gonna spend... If we wanna use digital media, we spend 20 minutes, you know, and we-" At this time of the day, and we're not using it ad hoc in, in these situations, and to really be choosy about the content so that it's really high quality and it's not AI slop. So those are a few pointers for caregivers.

And I'm sorry, I just talked a lot, and so I know I haven't addressed Jessica's question but I'm sure others have, Yeah, so Jessica's question

SHAH: was around balance. You know- Yeah ... you started to answer this, but around, you know, should it be a complete ban or, like, when parents are stressed and they need to use, they, you know, use these kinds of things to soothe or to give themselves a break, is there, do you guys have recommendations on a balance?

Should there be a total ban? What do you think about that? And I guess at what point could a family think about, this is connecting to another question I'm gonna just add on, is at what point should there be protecting children versus supporting AI literacy? Yeah. And for any

CASTELLANOS: of

SHAH: you.

CASTELLANOS: I think I'm gonna respond as a mom and then as an entrepreneur- Yeah

who advocates for AI that has value. Many of my, my friends ask me this because they're like, "Oh, you work on early childhood development." And before I was more politically correct and nice, I would say I, I will ban it completely until they're at least, you know, developmentally more secure. Like, before three years old, I will never expose my own kids to AI because we know from the science they don't need those tools at that age.

They cannot even comprehend mathematics, and AI is mathematics and statistics. So you will n- you wouldn't expose your kid to something they cannot even comprehend at, at that point. So this is just my perspective as a mother, and I'm of course all about AI and the power as a complement to human efforts.

And I think many entrepreneurs in the tech world are also like, "No, no, no," tech, certain tech for, for their own kids. So this is coming from someone who uses AI, so I will, I will ban it on the first three years of my children's life.

BOTEACH: Yeah. And one other point, I mean, we talked about soothing, but there's also constructive conflict.

You know, there's also something, AI is frictionless. It's, like, designed to make your life-easier to agree with you, to make you think you're the smartest, et cetera. But the skills that, again, one million new neural connections a second, and so much of that is through that is through that caregiver interaction or through with their peers or a sibling where they're-you're going to have ruptures and repair, and that's actually part of the development process.

You're going to have frustration and learn how to regulate those emotions. You're gonna fight with your sibling over who gets something, and when you just sort of put a tech toy in front of them, then they don't have the chance to sort of learn negotiation and conflict resolution and those basic skills that we need for democracy and for society, never mind human relationships.

So it's not, I'm not making a call on whether or not to completely ban or not, but I think that in addition to the soothing and emotional regulation, another thing is that we don't want AI to be training our kids in ways that, like, lessen their ability to be fully human as they age and develop and undermine those necessary problem-solving and critical thinking skills that develop in relationship with other human beings.

SHAH: Yeah. And Melissa, I think this issue of, like, f- AI is frictionless is so important because that's how you learn. Friction is how you learn, so that's how the brain develops. So I think thank you for that point. So Tiffany, another question that has come up, and it's from a pediatrician, so I'm gonna ask you this.

But others of course can also jump in. This pediatrician wants to know how should we counsel families about AI tools to support healthy development, and how might AI in early childhood widen or reduce existing disparities in child health and development, particularly across socioeconomic or racial groups?

So what would you say to all those pediatricians out there?

MUNZER: Yeah. That's a great question, and I think we've talked about how AI tools can support healthy development through parents. And so I'll take, I'll spend more time on the latter question around re- how might AI widen or reduce existing disparities.

And we know that the algorithm and AI data, it's an amalgamation of all the data that's on the internet, and that data is, you know, garbage in, garbage out. And so that data has s- so many systemic biases that an AI computational model is almost a black box. We don't know how those biases might widen systemic, already existing systemic disparities.

So that's from the algorithm perspective, that there's really worry that there's a, a lot of bias in those systems. And also we know that there are already unfortunately racial and socioeconomic disparities in how teens are using AI. And so that this is less pertinent to our early childhood years, but we know that specifically Black and Latino teens and teens from lower- Socioeconomic status homes are more likely to use AI for schoolwork.

And I think this calls back to what Melissa was talking about, that there's these big policy gaps in investment in children's education and the systems that really support children and families. And so what we see sometimes is this patterning of potentially technology and the function of technology being used trying to fill these big holes in policy, unfortunately, but it- in a way that doesn't meet the true needs of its constituents.

SHAH: Great. So thanks so much. Unfortunately, we don't have time for any more questions, even though we got so many amazing questions. We're gonna try our best to figure out a way to, you know, slowly answer between Brookings and Zero to Three to find a way to answer some of those questions. So thank you so much to Tiffany, Andreana, and Melissa.

All the insights you brought were so interesting and, you know, I was taking notes even though I knew what you were going to talk about. So I hope this was also very useful to everyone else in the audience. So I take away, you know, a number of things from this conversation. You know, it can cau- we know that AI can cause harm, especially when with the child-facing technology that's currently out there, and but there's also potential for the tech that's adult-facing such as Affinidata and others that, you know, but we might want to be cautious around the AI-embedded toys and stuffed animals.

So designing products that support children and caregivers in their lives is possible, and I think our speakers mentioned some key principles to think about in designing products. And when these products are public goods, like what Andreana is doing, and embedded in public systems, they could potentially serve many more children and families to kind of fill the, the gap in access.

So the standard that I would ask us all to think about and carry is quite simple, and it's come up in our conversation today, and that's is this technology additive? Does it create more space for a baby to be held, seen, and responded to or less? Does it free up a caregiver to be more present? Does it deal with the administrative things that a teacher or a childcare worker needs so that, That person can spend more time with the children, or does it quietly substitute for that presence?

So Bronfenbrenner's insight holds that every child needs an adult who is irrationally crazy about them, and our job as researchers, policymakers, designers, advocates, and parents and caregivers is to build a world where technology makes that more possible, not less. We're not gonna be able to stop the technological innovation that's happening, but we can protect our children, and the most important technology in a baby's life is still the human being holding him or her, and that is not a small thing.

So thank you to all of you for joining us today, and stay tuned for the next webinar in the Generation AI Starts Early series.