EARLY LEARNING

What Science Tells Us About Early Childhood Development

By **Emily Tate** Nov 20, 2019

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The use of science to inform learning and development can have profound results for children, particularly those in their first few years of life.

So say the experts—among them Randa Grob-Zakhary, a resident of Switzerland who holds doctoral degrees in neuroscience and medicine from Johns Hopkins University. Trained as a physician and neurosurgeon, Grob-Zakhary came to the education industry when she was pregnant with her first child, a time during which she "became acutely aware of the massive gap between what we know about children's learning and development, and what we're actually using," she says.

In the years since, she has held a number of esteemed positions, including as CEO of the LEGO Foundation and as a senior fellow at the Brookings Institution. She's currently in the process of launching Insights for Education, a foundation to help organizations apply the evidence-based practices that we know work well. "The whole purpose is not to develop new research but to make much more use of what's there already," she explains.

One of the many areas Grob-Zakhary wants to zero in on in her new role is early childhood education, which studies show is the most critical time in a

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person's development. To learn more about this work, EdSurge caught up with Grob-Zakhary ahead of the World Innovation Summit on Education (WISE) held this week in Doha, Qatar, where she will be discussing the relationship between neuroscience and learning.

This article has been edited and condensed for clarity and brevity.

EdSurge: How is the field of early childhood tapping into existing neuroscience or learning science to inform their practices?

Grob-Zakhary: Early childhood is a great place to unpack and explore the gap between knowing and doing, because there have been tremendous developments in the understanding of how children learn and grow in early childhood. And yet the way we support at the government level, at the policy level and in education practices have not significantly changed.

Across lifelong learning, but especially in early childhood, the tools and techniques have accelerated the understanding of early childhood in a tremendous way. It's been wonderful, but children around the world do not profit from that yet. I think there are a number of reasons why we see that, but more importantly we have to look more aggressively at how we can be better at translating what we know into practice.

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And in some cases the information is known, but there is a great lack of understanding in how to implement those things. Not what to do, but how to do it at the system level, at the classroom level and also at the parent level. Parents are very interested in this kind of information, and you see lots of things popping up to reach out directly to parents. But in general there's still a tremendous gap.

More than any other age group, early childhood is a wonderful place where neuroscience can be applied along with other sciences to strengthen children's growth and development, and not just for children directly, but for their parents, their families and supporters.

What are some examples of what the science says about those early years, birth through age five?

We used to not really understand what happens in the first few years and certainly underestimate the robustness of development. Now we know how much happens early, and it's dramatically critical.

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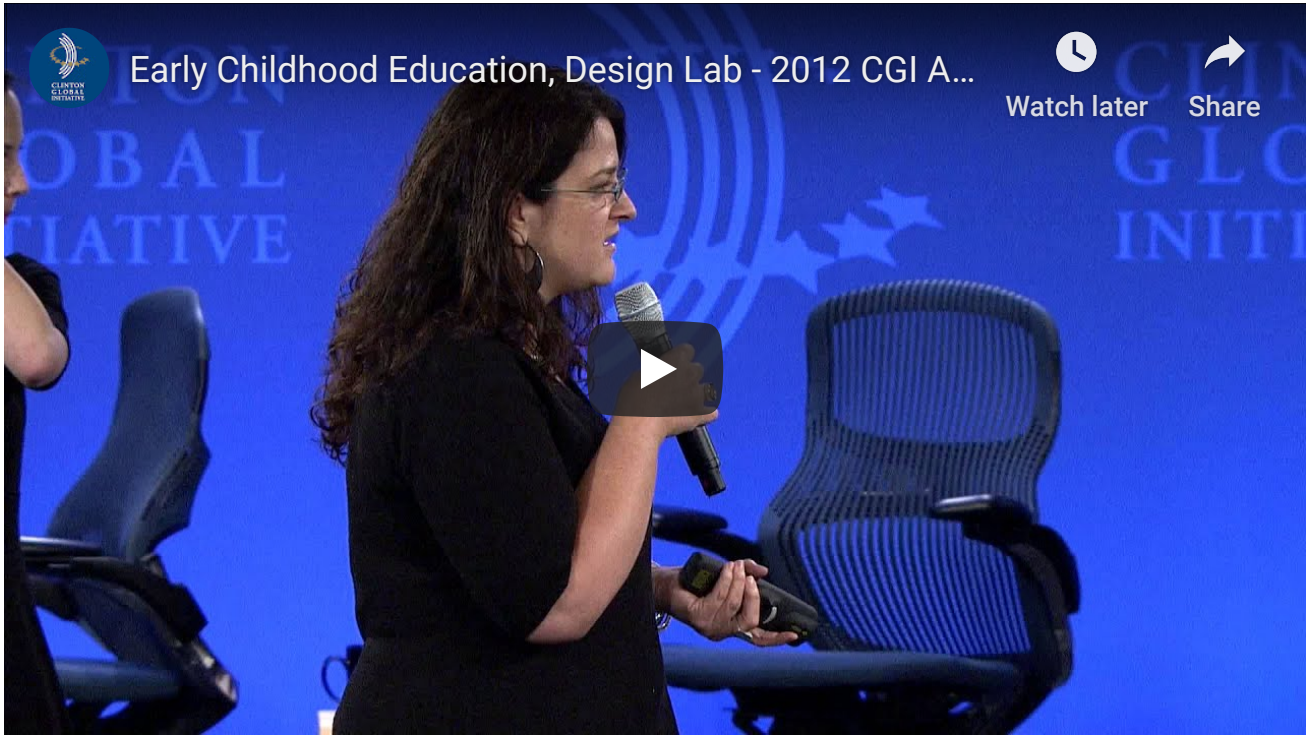

Grob-Zakhary on the science of early learning.

We know that in those first five years, you are tremendously affected by experiences, and they override your genetics. We know that genetics is important, too, but we also—at least according to the latest thinking—know that experiences are much more critical than what you're born with. And those experiences are especially important for those competencies that have the "critical period" in the first five years.

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So not only are the first five years critical, but there are certain functions that develop like language, reasoning and empathy. It's not just the core of traditional academic learning. Many critical skills have their first critical period in between the age of two and four, or two and five.

And what critical period means, speaking from a neuroscience perspective, is that your body is programmed to [reach certain milestones]. It doesn't happen at the same age or the same moment for every child, but it happens in the same sequence. And it's highly predictable, and it means that in that critical period you have highly accelerated, very robust formation and maturing of connections and pathways. And they have to do with chemical changes that happen in and around the neurons and pathways, and it happens in a very pre-programmed fashion.

And so, what we've learned from neuroscience is that it's important to enhance and enrich experiences and remove stress—and I don't mean homework stress. I mean serious stress, like addiction, poverty, starvation, abuse, crisis. If those things are happening to a child in those critical periods, it also means they don't even have the minimal development. They're falling behind already.

It's not just that the first five years are critical, but they're very malleable to what experiences the children have. And not only to traditional academic

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skills, but also empathy and learning. And it's also not just your learning and your brain—your development in those first five years also affects your lifelong health. Both traditional cardiac health and just overall physiological well being, but also social and emotional well being.

How do you get the wider public to appreciate how critical those first few years are, and get them to invest in it—invest in kids' education and ensure that they aren't being exposed to things that could hurt them, like poverty and addiction and trauma?

There has been a lot of movement in the last decade on this. But there's obviously so much more to go. Let me point to three early successes, or things that I'm seeing be effective.

Number one is recognizing it starts with the family. And not just thinking about the child or the day care center, but really thinking about the family being the environment for the child, the predominantly influential one, and the first teachers, if you will. Many interventions now start with the family, or include the family in supporting and engaging children, and how to mitigate challenges that can impact a child.

And if you don't include the family, we've also seen in studies that any improvements tend to regress, with children's learning outcomes and

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development outcomes.

Number two is a greater linking between development and health, or education and health, and early childhood. So much more is about engaging pediatricians and maternal health for pregnant moms, and new mothers and parents. That is something that has moved tremendously in the last few years, and is also part of foundations' work, agency funding and government programs.

And the third, actually, are people like you. There's been a tremendous push for journalists writing in mainstream media to both be informed about early childhood and incentivized to write about it in a way that is compelling for mainstream audiences.

So reaching the parents, connecting with health and being much more mainstream about the kind of communication that gets out there—these are the kinds of things we're seeing.

Correction: An earlier version of this article described Insights for Education as a consulting company. In fact, it is a foundation.

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