Mind in the Making The Science of Early Learning

What is Early Learning?

Research on the development of young children, including their brain development, creates a great deal of interest in early learning, with many positive, but also some negative, repercussions.

On the positive side, studies show that more and more Americans understand that "real" learning doesn't "wait" until children enter school. The early years are critically important learning years.

On the negative side, interest in early learning sometimes strays far away from the science, leading to some misconceptions:

Misconception: Children *begin* learning from the moment of birth on.

Science says: Children are born learning and this learning begins even before birth. Studies in neuroscience by Dr. Charles Nelson of Harvard Medical School, for example, reveal that at birth, a child's brain patterns are different when hearing a "known" voice (the voice of his or her mother because the child has heard this voice in utero) from the voice of a stranger. Learning is one of the most important human survival skills and all children are born learning.

> *Young children from the beginning cannot help but learn—they don't have to be taught to learn, they are naturally wired up to learn. From the very beginning, children are learning about the world. They are also learning about what learning is about. So everything that is going on is a learning experience.*
>
> Jack P. Shonkoff, MD
> Samuel F. and Rose B. Gingold Professor of Human Development and Social Policy
> Former Dean, Heller School for Social Policy and Management
> Brandeis University

Misconception: Children are empty vessels or blank slates to be filled with knowledge.

Science says: Children are active learners and the more involved they are in their own learning, the better they learn. Children's powerful drive to learn is based on their need to make sense of the world and understand their own experiences. Some researchers have compared children's learning to that of scientists—children try to figure out what is happening to them and what effect they have on others by testing their ideas and theories, discarding those that don't fit their experience and building on those that do.

> *We used to think of learning as information that you shoved into a vessel and then glued the vessel shut and you would study retention over time, as though learning were the accumulation of facts. Everything we know now about learning says that learning is a moveable, living, vibrating*

construct—a set of categories, a set of beliefs, principles in which you are trying to make sense of the universe.

Patricia K. Kuhl, PhD
Professor of Speech and Hearing Sciences
Co-Director, Institute for Learning and Brain Sciences
University of Washington

If you think about it, scientists learn mostly the same way children are learning. The way [scientists] have to learn is by really being driven and going out and trying lots of things, and doing lots of experiments and having lots of fun doing it. And then we try to make sense of what we find out. And that seems to be the same... literally, the same processes that are involved with children.

Alison Gopnik, DPhil
Professor of Psychology
Institute of Cognitive Science
University of California, Berkeley

Misconception: Social, emotional and intellectual learning are separate, and intellectual or cognitive learning is most important.

Science says: Although adults talk about social, emotional and intellectual learning as being different, studies show they are completely interconnected. Children learn through their important relationships (social learning); they learn when they feel good and are engaged and motivated in what they are learning (emotional learning); and they learn when they are making sense of their world (intellectual learning). One type of learning (such as learning numbers, letters or the like) is not more important than another, since for children to learn—social, emotional and intellectual (SEI) learning all go together.

The brain is an interdisciplinary device. You can think of language, cognition and social/emotional development as being totally separate, but that is not what the baby provides evidence of. The baby is trying to map how people work, how the world works, and they're doing that as a composite. It's a multimedia event—that's what the world is and the brain maps it as a multimedia event, not separately.

Patricia K. Kuhl, PhD
Professor of Speech and Hearing Sciences
Co-Director, Institute for Learning and Brain Sciences
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Research tells us that children who make friends easily in kindergarten and are accepted by their classmates are also the ones who work hard in a self-directed way that fosters their academic competence.

Kathryn A. Hirsh-Pasek, PhD
Professor of Psychology
Director, Infant Language Laboratory
Temple University

Roberta M. Golinkoff, PhD
H. Rodney Sharp Professor, School of Education
Director, Infant Language Project
University of Delaware

Misconception: The adult's role is to "teach" children, making every moment a teaching moment.

Science says: The adult's role is to encourage and increase children's engagement in learning. The public has been told to read, sing and talk to their children, making every moment a teaching moment. While reading, talking and singing to children are truly important, *how* these activities happen are what's most important. Adults who bombard children with factual information—like colors or numbers or letters—every moment or who feel that they must entertain children non-stop, are likely to over-stimulate and turn children away from learning, just as much as if they criticize or ignore children's engagement in learning.

> *The motivation to learn comes from the pleasure in learning, the joy in learning. When learning becomes a duty, the child rebels against it or gets bored with it.*
>
> Alicia F. Lieberman. PhD
> The Johns Hopkins University Professor of Medical Psychology
> University of California, San Francisco
> Director, Child Trauma Research Project and Senior Psychologist, Infant-Parent Program
> San Francisco General Hospital

There are, or course, times when direct teaching is crucial. Children do need to learn factual information, colors and numbers and letters. But again, *how* direct teaching occurs is what is most important. At best, direct teaching should be engaging, should build on children's interests and should extend their learning.

Principles of Early Learning

Children, like adults, need quiet, "hang around" times and active times to explore, reflect, imagine and learn.

> *We've learned that you can't be connected all the time.*
>
> Edward Z. Tronick, PhD
> Chief, Child Development Unit, Children's Hospital of Boston
> Associate Professor of Pediatrics, Harvard Medical School

Learning for young children should focus on the here and now—as a way of interacting with the world, not just on what learning can do for children in the future. As an early childhood teacher recently said, "Childhood is a journey, not a race."

> *You know, in early childhood there's always this concept of readiness—they are getting ready for the next thing. They're getting ready for learning. Well, frankly, they are doing it in the moment. They are in the moment of learning—that's what is important.*
>
> Suzanne C. Carothers, PhD
> Professor, Department of Teaching and Learning
> The Steinhardt School of Education
> New York University

Learning should be about the child, not about the adult keeping up with other people's children or proving herself or himself as a perfect parent or caregiver.

Learning should help your child understand his or her experiences, not fill their heads with facts through "drill and kill." And when children are actively involved in what they are learning in a hands-on way, they remember more.

It isn't enough to just tell them [children] what the answer is, they have to in some sense recreate or create that answer for themselves. And that seems to be the fundamental process that's involved in learning.

Alison Gopnik, PhD
Professor of Psychology
Institute of Cognitive Science
University of California, Berkeley

Learning should include joy. If learning is engaging, children will be motivated to keep learning in the same way that we learn best when the learning is motivating and meaningful. This does not mean that children should not face challenges. That's what's learning is all about! The important message is to encourage children's natural drive to overcome challenges.

You can't stop a young child from learning to talk or walk. Nor can you keep a young child from observing what happens when she or he throws something on the floor or experimenting with peek-a-boo and hide-and-seek to understand what happens when things disappear and reappear. Children are born engaged in learning. And adults can either keep this engagement in learning alive or shut it down.

Studies across different scientific fields show that young children are most likely to learn:

- when they are interested and actively engaged;
- when they are connected to the significant adults in their lives; and
- when the adult *follows the child's lead*, extending, elaborating and building what the child is working on.

The best ways to promote early learning are to:

- **Connect**—relationships are the "engine of development." This connection needs to be authentic. We need to connect with children as the people we are, as their family members or caregivers, not in a "role" of super teacher.

  Relationships give a child confidence to go out and explore the world.

  Ross A. Thompson. PhD
  Professor of Psychology
  University of California, Davis

  There is no development without relationships.

  Jack P. Shonkoff, MD
  Samuel F. and Rose B. Gingold Professor of Human Development and Social Policy
  Former Dean, Heller School for Social Policy and Management
  Brandeis University

- **Watch and listen**—Look: understanding what children are trying to understand, figure out and do is essential to promoting their learning. See the world through their eyes and notice what they are curious about and are trying to learn and do.
- **Extend**—Furthering children's inquiries and building on their interests are the keys to maintaining their engagement in learning. We all learn more when we are learning something that we care about learning.

I think every parent, every scientist, every early childhood educator who has looked at a young child sees that curiosity, that wonder and asks themselves, "What can we do to keep this alive in a child, to foster it, to fan the flames of that curiosity—not to dampen them?"

Andrew N. Meltzoff, PhD
Job and Gertrud Tamaki Endowed Chair
Professor of Psychology
Co-Director, Institute for Learning and Brain Sciences
University of Washington

The hope is that parents [and caregivers] will be so excited themselves about learning and teaching that the child will carry that inside of him when he goes into the world on his own.

Alicia F. Lieberman. PhD
The Johns Hopkins University Professor of Medical Psychology
University of California, San Francisco
Director, Child Trauma Research Project and Senior Psychologist, Infant-Parent Program
San Francisco General Hospital

Does this mean that adults don't "teach?" Of course not. There are many things that adults need to teach children—from notions like "stoves are hot" and "you can't hurt your sister" to counting, sorting or learning to read. But keeping children engaged in learning requires a balance between direct teaching and following children's lead to extend their interests. And we often teach best by example than through directives.

Does this mean that learning and teaching must always be serious? No. Being curious and learning about the world should be engaging for you as well as your child.

Does this mean that learning shouldn't be challenging? Not at all. If you watch young children learn, they are always overcoming challenges, such as learning to stand even though they are teetering or learning to walk, talk or roller skate. It is important that adults not try to "fix" problems and make everything too easy, but to acknowledge children's efforts and provide support when they are trying to do something hard.

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