

ANESTHESIA AND THE AGING BRAIN: WHAT ARE THE RISKS? *page 60*

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THE RIGHT START

How to Fix Our Preschools

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SIDE OF
EMPATHY

WHERE
CONSCIOUSNESS
LIVES IN THE
BRAIN

THE TEMPERATURE
OF EMOTIONS





Getting Preschool Right

The push for rigorous prekindergarten education has overlooked the evidence on how young kids really learn best

By Melinda Wenner Moyer

PHOTOGRAPHS BY ANNABEL CLARK



Two students build together at the Randolph School, a private school that runs from prekindergarten through fifth grade. High-quality preschool programs balance freewheeling playtime with structured activities and guidance from teachers.

The block room at the Randolph School in Wappingers Falls, N.Y., is bustling with preschool builders. One boy places a tall, wood, cross-shaped block under a newly erected archway, explaining to onlookers that it is a revolving door. On a nearby wall hang drawings the children have made of past creations; sometimes the students build over several days, creating miniature, interconnected cities.

“Thomas wrecked my building!” one child complains. Evan Miklos, his teacher, has been observing the children, occasionally piping in with open-ended questions or suggestions. “Why don’t you tell Thomas how that makes you feel?” Miklos suggests. “Sometimes this kind of thing happens by accident, but it’s okay to tell him you’re frustrated.”

The boy follows his advice, and tension quickly diffuses. Moments later recess begins. The children keep all-weather gear in

their cubbies so that they can play outside every day—even when it is raining or snowing. All the kids clean up and head outside for an hour, crossing a red brick patio that they built last year as a group. They did most of the measuring, designing and bricklaying themselves. “Kids love real work,” Miklos says.

According to the latest research in early childhood education, Randolph, a private school, is doing a lot of things right. Its child-centered curriculum encourages students to learn math, literacy and critical thinking via hands-on activities and play, making their education largely self-directed. Teachers are warm, responsive and skilled—they help kids navigate their emotions, they encourage and value the students’ perspectives, and they guide playtime to make it more meaningful. Young children learn best, says the nonprofit National Association for the Education of Young Children (NAEYC), in precisely these kinds of environments.

Over the past two decades policy makers in many states have come to recognize the foundational importance of preschool—especially for lower-income children—and have earmarked funds to support it. In 2013 President Barack Obama unveiled a plan to provide universal preschool to all low- and moderate-income four-year-olds across the country, citing it as a way to narrow the vast achievement gap that persists between wealthy and poor kids. In 2012 28 percent of American four-year-olds attended preschool, twice the percentage that did in 2002. But even as more and more preschools—many state-

FAST FACTS

THE PROBLEM WITH PRESCHOOL

- ❶ Poor funding, ill-prepared teachers and a premature emphasis on academics put many pre-K programs out of alignment with what researchers recommend.
- ❷ Many programs sideline recess and exploration in favor of teacher-led instruction; other schools rely too much on unstructured play. Both approaches are problematic.
- ❸ “Scaffolded” play, in which teachers prompt and guide children at play to help them learn, may be uniquely effective in helping preschoolers master new concepts.

funded—open around the country, an ever shrinking percentage of them resemble Randolph.

Only 18 percent of low-income American children, versus 29 percent of high-income kids, are getting a high-quality preschool education, according to the Center on Enhancing Early Learning Outcomes, an arm of the U.S. Department of Education. Many children attend mediocre schools that provide few, if any, lasting benefits.

Why are America's preschools failing? For one thing, few states fund their pre-K programs well. Public and private spending on preschool amounts to 0.4 percent of the U.S. gross domestic product (GDP), less than half as much as is spent by Spain, Israel or Denmark. In part as a result, preschool teachers are woefully underpaid and underskilled. Annually they earn between \$10,000 and \$30,000 less than historically undersalaried public school elementary teachers, driving a turnover rate so high it is rivaled only by the fast food industry. Until these funding and workforce problems are addressed, "we can come up with the best strategies for teaching in the world," says Deborah Stipek, a professor at the Stanford University Graduate School of Education, "but they're not going to be implemented."

Preschool curricula remain subpar for other reasons, too. Because of the push for greater rigor and accountability in public education, kindergarten preparation and readiness have become a national priority. In the 2010–2011 school year 73 percent of rising U.S. kindergartners were administered readiness tests that have, unsurprisingly, also created "pressure downward into the early childhood education space," explains Susan Hedges, the NAEYC's director of program quality research.

This pressure is not in itself a problem, but how preschools are handling it is: they are changing their pedagogical approaches, replacing play and exploratory activities with teacher-driven instruction, which, ironically, is less effective for learning in the long term and stifles curiosity and creativity. New research suggests we should be doing precisely the opposite: teaching kids through guided—or "scaffolded"—play and hands-on, child-led activities, which can help them learn concepts more deeply. "Somehow, somewhere, we decided that success for our children is how well they do on math and reading tests," says Kathy Hirsh-Pasek, a psychologist at Temple University who studies how children learn. "We kind of forgot that what's really important is raising humans."

The Devil Is in the Details

The seeds of our country's vast reconceptualization of preschool were sown in 1983, when President Ronald Reagan's National Commission on Excellence in Education published a report entitled *A Nation at Risk*. It asserted, among other things, that if "an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war." The report demanded that the country dedicate greater resources to education to make public school more rigorous.

Fast-forward to 2002, with President George W. Bush's sign-

ing of the No Child Left Behind Act (NCLB), and public schools were suddenly being held accountable for educational outcomes in consequential ways. "Passage of NCLB made for the greatest amount of standardized testing this country has ever seen," says Samuel Meisels, founding executive director of the Buffett Early Childhood Institute at the University of Nebraska.

Accountability itself is not a bad thing; it is important for schools to assess whether their programs are effective. But high-stakes standardized tests are not always reliable, and they can have unintended downstream effects. For one thing, there has been little evidence to suggest that scores on early elemen-

Amid a growing emphasis on math and reading tests, "we kind of forgot that what's really important is raising humans," says Kathy Hirsh-Pasek, a Temple University psychologist.

tary school standardized tests predict academic success later on. Yet under NCLB, public schools that did not meet targeted scores for multiple years could suffer serious sanctions, including losing funding or being shut down entirely—so administrators and teachers have found themselves under enormous pressure to ensure that students test well. "We saw an increase in expectations for what children would be able to do early on in school," Meisels says, "and that resulted in a downward extension of these academic demands through the primary grades and then, eventually, into early childhood."

At the same time, policy makers began to recognize the need for publicly funded prekindergarten programs. If kids from low-income homes were doing poorly in school, the thinking went, then educating them earlier might help.

There were impressive precedents, such as the Abecedarian Project, a long-term research study undertaken by researchers in North Carolina starting in 1972. They randomly assigned 111 babies, deemed "high risk" because of factors that included low family income and education, either to get no intervention or to receive high-quality child care and preschool for eight hours a day, five days a week, from infancy through age five. In elementary school, those in the intervention arm had stronger cognitive and academic skills than the control group; by age 30 they were 3.8 times more likely to have gone to college.

But today's state-funded pre-K programs look very little

Preschool by the Numbers

ILLUSTRATION BY PETER HOEY

Attendance

77% of kids from high-income homes attend vs. **57%** of kids from low-income homes



Who Goes?

44% of rural four-year-olds attend vs. **79%** of urban and suburban kids

About 60% of preschoolers (at any age) attend a public preprimary school

Public vs. Private

29% of all four-year-olds attend a pre-K run by the state

25% attend a private preschool

9% attend the federal Head Start program



How Much Is Invested?



\$8,147 spent per student in federal Head Start programs

\$4,521 average annual per-child spending in state-run preschools



\$16,431 per child in Washington, D.C. (the most in the U.S.)

\$1,778 per child in Mississippi, which spends the least apart from the nine states that have no public preschools



How Do Teachers Fare?

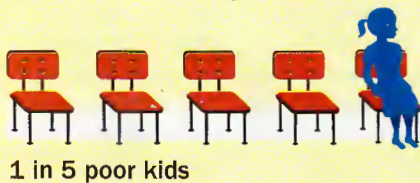
30%–37%: Annual turnover among pre-K and child care staff, driven by low wages, limited training and instability in management



Median preschool educator's salary

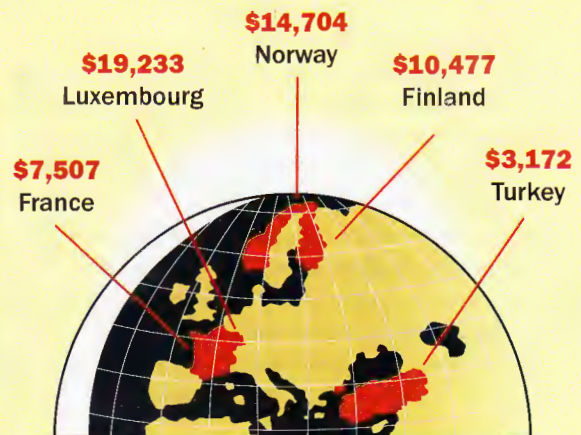


VS. Median salary for a public elementary school teacher in the U.S.



Who Gets a High-Quality Start in School?

Average Annual Spending per Preschooler in Other Countries



like Abecedarian. They do not serve kids from infancy to age five, nor do they last all day. Funding is also much less generous. Abecedarian spent an estimated \$18,648 per child a year in 2016 dollars. In contrast, state spending on pre-K in 2015 averaged just \$4,489 per enrolled child.

Abecedarian was also pedagogically distinct from today's preschool programs. The curriculum was more akin to that of the Randolph School (which, not incidentally, has similar costs—\$15,200 tuition a year for a full-day student, although most receive financial aid). Its program largely comprised “learning games” that the children frequently played with teachers, along with lots of shared reading and responsive care-

education researcher at Eastern Connecticut State University. “Then you go into Hartford, where there's real concern about kids and their learning, and it's just so rigid, and the focus is on direct instruction.” (These trends continue into elementary school: schools that serve low-income kids typically have less recess time than those serving more affluent kids.)

Although few would argue with the need for some direct instruction in the preschool classroom, most researchers say it should not be the primary means for learning. Young children find it boring and have difficulty paying attention; others may find it stressful. Many preschools have prescribed “literacy lessons,” for instance, in which kids are asked to sit quietly on the

Recess is an invaluable part of the pre-K experience, although many programs are cutting unstructured time. Randolph students participate in a spontaneous drumming session during an outdoor break (1). Indoors, a pair of four-year-olds discuss a building project with a teacher (2).



giving. Many of today's state-run pre-K programs rely more on direct instruction. They instruct and drill kids on math, vocabulary and literacy skills rather than letting children learn these skills through play and other self-directed activities.

There are many potential reasons for this curriculum shift. First, state-run programs are usually formally connected to the public school system, so they tend to adopt the same teaching strategies. Second, preschool teachers may not have the time or resources to devote to creative curriculum development, so they rely instead on “curriculum kits” that often lead to scripted, teacher-led instruction. “Preschools worried about not meeting expectations—typically the lower-performing programs and those serving disadvantaged students—embrace these products and comprehensive curriculum packages in the vain hope that they've landed on the magic bullet that will cover the standards and lift achievement scores without any guesswork,” writes early childhood educator Erika Christakis in her 2016 book *The Importance of Being Little*.

Finally, because children who enroll in state-run programs are at high risk for future academic problems, administrators and teachers may feel they have to provide more formal instruction to give them an edge—even if this approach is not actually supported by science. “You go out to middle-class preschools, and they're so much more relaxed—they take time for children to enjoy childhood, they do exciting fun things, they have projects,” explains Jeffrey Trawick-Smith, an early edu-

floor and listen to the teacher talk about the sound a letter makes and what it looks like. Occasionally the children are asked to participate in a contrived exercise, such as shaping their hands like an “O” or sounding out a word as a group. But these scripted, teacher-led lessons limit the amount of spontaneous, one-on-one conversation kids can have with one another and with their teachers—and, ironically, research has shown that frequent opportunities for extended discourse are what boost literacy and language skills the most.

More fundamentally, these kinds of curricula can interfere with crucial facets of preschool teaching. “A lot of times a politically driven agenda derails teachers from being emotionally and socially present, which is a really core part of their value,” says Lesley Koplew, director of the Center for Emotionally Responsive Practice at the Bank Street College of Education in New York City. In other words, for young children rigid academic curricula can influence the character and atmosphere of the preschool classroom in ways that ultimately stifle learning.

In a 2002 study, Rebecca Marcon, a developmental psy-

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chologist at the University of North Florida, published a study showing that fourth graders who had attended academic pre-K programs had lower grades than those who had attended schools with a child-centered focus. Stipek's research at Stanford has shown that kids who attend academic preschools rate their own abilities as lower, have stunted expectations of their own success, and are less motivated than kids who go to more child-centered preschools like Randolph.

In a randomized controlled trial released in 2015, researchers at Vanderbilt University compared how 773 disadvantaged children who had attended a Tennessee-run pre-K program fared in elementary school compared with 303 similar students who had been wait-listed for the program but did not attend. They found that although the pre-K attendees initially performed better than the control group on six measures, including work-related skills and social behavior, by the second grade they actually began performing worse. In first grade, teachers also rated the pre-K attendees as having poorer work skills and feeling more negative about school compared with the control students, most of whom had not gone to any pre-K.

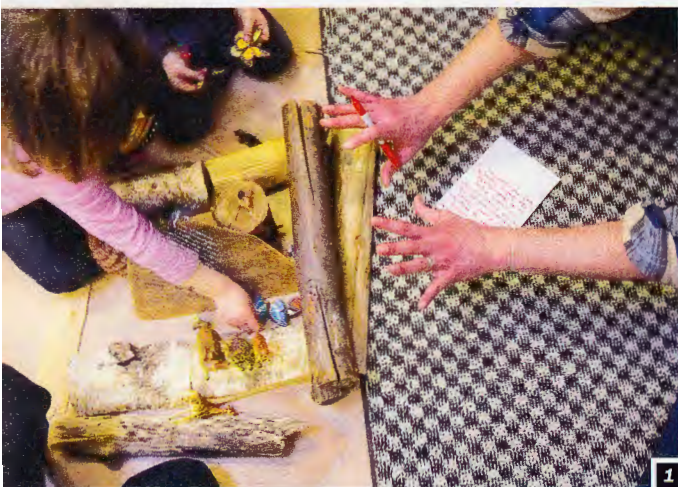
Ample research suggests that kids from well-off families do not benefit as much from a good preschool as low-income children do, because they have so many rich interactions and experi-

ences at home, and yet these are also the kids who tend to enroll in the best programs. Put another way: the youngsters who need high-quality preschools the most are the least likely to get them.

For decades researchers have been touting the benefits of free, unstructured play for children. "Play is critical learning in the way that's developmentally appropriate for young children," NAEYC's Hedges says. Kids learn about physics when they play with marbles, levers and ramps; they learn about math and geometry when they play with blocks. Make believe teaches self-regulation: If you are playing the patient and not the doctor, you do not get to use the stethoscope, even if you really want to.

But the science on play has evolved in recent years, and today many researchers believe that play can be even more educational for young kids when it is not free and unstructured but rather when it is guided by skilled adults. "Good teachers set up play experiences, a variety of them," Hedges says. "When you see there's a time to introduce complexity to their play and enrich that for them—either verbally or through getting down and playing with them—you do that."

Free play certainly has a time and a place, scientists say, but it also has limits—when similarly aged kids play together, they can get into a rut and act out scenarios over and over again. I saw this happen when I visited a preschool in Westchester County, New York: The teachers never engaged with the students while they played, and after a while some of the play routines turned stale, and the kids lost interest.



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Enhancing Playtime

A number of scenes unfold as the Randolph students frolic outside during recess. Some traverse a rope bridge; others play in a sandbox; a few bang makeshift drums made of overturned plastic buckets. But what seems most extraordinary is the sight of Randolph's teachers playing along with the students—a pedagogical technique that many researchers believe is a hallmark of high-quality preschool education.

Scaffolded play is more important and useful than it used to be, researchers say, because kids are not having the same types of rich play experiences that they had in decades past. Generations ago kids spent hours a day outside playing with mixed-age groups of neighborhood children. The oldest boys and girls modeled and taught the younger ones more sophisticated forms of play. Today such romps are much less frequent because of parental safety concerns and the takeover of more structured activities such as sports and music lessons. When kids do play, it is typically with kids their own age, who do not provide the same prompts and challenges. But teachers can. During recess, one Randolph preschool student explained that

she was making “sand smoothies” for anyone who might be hungry. A nearby teacher piped up and asked how much they cost, prompting a discussion about money and math.

Research suggests these kinds of play prompts help kids learn important concepts. In a 2016 study, Trawick-Smith and his colleagues recorded interactions between 47 teacher-student pairs in preschool and found that the students whose teachers scaffolded their play by introducing mathematical ideas and discussions later scored better on tests that measure math ability. “We have found that interactions that are respectful of children’s play but enhance children’s thinking are really powerful and lead to all kinds of positive outcomes,” he says.

In a 2013 study, Johns Hopkins University psychologist Kelly Fisher, then at Temple, and her colleagues divided 70 children ages four and five into three groups. Some were given the opportunity to learn about geometric shapes through guided play, and others played freely with the shapes. A third group was taught about the shapes using direct instruction. The kids who engaged in the guided play learned the most, by far, about the shapes, and they remembered what they had learned a week later. Kids in the direct instruction and free-play groups, in contrast, had trouble recognizing shapes presented in different ways and orientations. As the researchers concluded, the guided play “helps direct chil-

What Makes a Good Preschool

When choosing a pre-K program, look for signs that the school is employing best practices:

- Kids have ample time to explore, play and be creative using a variety of materials.
- Teachers are warm and responsive and encourage conversation and participation.
- Kids feel safe and secure.
- Teachers set limits about acceptable behavior but also work with students to help them label, understand and cope with emotions.
- Teachers read to the children regularly—not just as a class but individually and in small groups.

then participated in a guided-play activity for 10 minutes related to the two new words. For instance, when the kids were learning the word “bake,” they were given a mixing bowl, oven mitt and timer and told to play-bake.

After four months, the researchers tested the preschool students. The children who participated in the **guided play** performed much better on standardized vocabulary tests designed to assess verbal ability: 62.5 percent of the kids who did guided play met age-appropriate benchmarks compared with only 44 percent of those who got only direct instruction.

Scaffolded play encourages kids to engage with materials and concepts in meaningful ways—far more than when they hear a lecture. Indeed, many researchers note that child-directed activities that are not technically “play” can still be highly educational. “Children can be engaged in, for example, looking at a pile of sand or a leaf under a microscope,” Yale’s Christakis says. “It’s not necessarily play, but it’s very engaging and requires active, hands-on and usually social experiences.”

Of course, ample play or exploratory time is not all that a preschool classroom needs, either—more important, in fact, may be the warmth and emotional responsiveness of the teacher. This is

often lacking in programs with poor resources. At a private preschool I visited outside of New York City, one that allowed hours of free play each day, the lead teacher did not invite her students to speak up or share thoughts during circle time or when she was trying to teach new concepts. One child who wanted to add her perspective to a discussion was admonished and told to be quiet. At snack time a boy who said he did not like his snack was told that he was not “being nice.”

In a 2001 study, researchers at the University of Virginia found that the quality of children’s relationships with their kindergarten teacher predicted various academic and behavioral outcomes in eighth grade. “Whatever happens in children’s first

Research shows that kids get more out of playing when teachers guide, or “scaffold,” imaginative activities, enriching story lines or adding math concepts. At Randolph, teachers participate as students build an outdoor habitat (1) and make observations at a brook near the school (2). Warmth and emotional responsiveness have also been shown to be crucial factors in teaching young learners (3).



dren’s attention to key defining shape features and prompts deeper conceptual processing.”

Guided play has also been shown to help with literacy. In a 2010 study, researchers at the University of Delaware had two groups of low-income preschoolers participate in a vocabulary activity twice a week for 30 minutes. One group was taught two vocabulary words using direct instruction the entire time. The teachers in this situation read a book containing the words, showed the children the words in the book, explained what they meant, asked the kids to repeat the definition and did a word-related action to help solidify their understanding. A second group was given similar direct instruction for 20 minutes and



Evan Miklos, a preschool teacher at Randolph, uses finger counting to help students solve simple math challenges. The lesson brings several groups of children together for a collaborative, interactive learning experience.

educational experiences sets the stage for receptivity for what comes later—so if you inherit a nurturing and interesting environment in preschool, that’s what school becomes for you,” Bank Street’s Koplow says. Randolph’s students clearly adored their teachers, and it was not hard to see

why—the teachers were all encouraging, responsive, playful and warm. There were more hugs in one day than you could count.

Valuing the Invaluable

Considering everything that goes into making preschools good, it is not too surprising that our country has so few of them. High-quality curricula require a lot of money and planning to create; they take a tremendous amount of skill to implement. Yet “it’s hard to demand a lot of education and preparation when you’re going to earn a salary as low as preschool teachers [get],” Stipek says. Indeed, the median preschool salary in the U.S. is \$28,570, according to a June 2016 report co-published by the U.S. Department of Education and the U.S. Department of Health and Human Services. Janitors and hairdressers are paid more.

Why are these crucial jobs—roles that shape the lives of our future generations—so underpaid? In large part, Nebraska’s Meisels blames sexism: 97 percent of preschool teachers are women, so it is “seen to be women’s work, and—I hate to say it—even unskilled work,” he says. In fact, as of 2015, 16 states did not require their preschool teachers to have bachelor’s degrees. And four of those states—Texas, Florida,

Arizona and Massachusetts—did not require them to have specialized training in early childhood education.

Preschool could be a way to help every American child, regardless of background, reach his or her fullest potential. But first, researchers say, the country needs to stop valuing universal preschool in and of itself and recognize that it is only high-quality preschool that can accomplish this feat. Then the country needs to be honest about what separates the good from the bad. We need to invest much more richly in our preschool workforce, understand the research on how young children learn, and stop worrying so much about tests and other useless proxies. It is time to put aside the worksheets and curriculum kits and let our nation’s preschoolers learn the way they do best—by engaging meaningfully with others and the world around them. **M**

MORE TO EXPLORE

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- **Lively Minds: Distinctions between Academic versus Intellectual Goals for Young Children.** Lillian G. Katz. *Defending the Early Years*. April 2015. <https://deyproject.files.wordpress.com/2015/04/dey-lively-minds-4-8-15.pdf>
- **The State of Preschool 2015.** National Institute for Early Education Research, 2016. <http://nieer.org/state-preschool-yearbooks/the-state-of-preschool-2015>
- **The Relationship of Teacher-Child Play Interactions to Mathematics Learning in Preschool.** Jeffrey Trawick-Smith et al. in *Early Childhood Development and Care*, Vol. 186, No. 5, pages 716–733; 2016.
- National Association for the Education of Young Children: www.naeyc.org
From Our Archives
- **The Serious Need for Play.** Melinda Wenner Moyer; February/March 2009