SECTION

A

PRESCHOOL

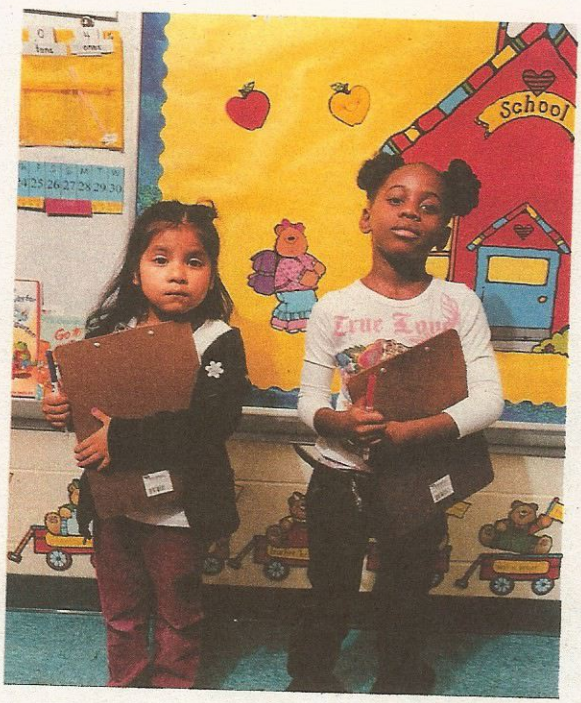
The Make-Believe Solution

Can imaginary play teach children to control their impulses — and be better students?

BY PAUL TOUGH

PHOTOGRAPHS BY
Gillian Laub

The Tools of the Mind program at a school in Red Bank, N.J., encourages "executive function" — the ability to think straight and self-regulate.



In kindergarten, students carry clipboards with their own lesson plan, a list of the day's activities, attached.

"Come *on*, Abigail."

"No, wait!" Abigail said. "I'm not finished!" She was bent low over her clipboard, a stubby pencil in her hand, slowly scratching out the letters in the book's title, one by one: T H E. . . .

"Abigail, we're waiting!" Jocelyn said, staring forcefully at her classmate. Henry, sitting next to her, sighed dramatically.

"I'm going as fast as I can!" Abigail said, looking harried. She brushed a strand of hair out of her eyes and plowed ahead: V E R Y. . . .

The three children were seated at their classroom's listening center, where their assignment was to leaf through a book together while listening on headphones to a CD with the voice of a teacher reading it aloud. The book in question was lying on the table in front of Jocelyn, and every few seconds, Abigail would jump up and lean over Jocelyn to peer at the cover, checking what came next in the title. Then she would dive back to the paper on her clipboard, and her pencil would carefully shape yet another letter: H U N. . . .

Henry fiddled with the CD player. Like Abigail and Jocelyn, he was a kindergarten student in Red Bank, a small town near the New Jersey shore. The students at the elementary school came mostly from working-class and low-income families, and, like the town itself, the student population was increasingly Hispanic. Jocelyn, with flowing dark hair, was the child of immigrants from Mexico; Henry was Hispanic with a spiky haircut; Abigail was white and blond.

"Abby!" Henry said. "Come on!" He and Jocelyn had long ago finished writing the title of the book on their lesson plans. They already had their headphones on. The only thing standing between them and the story was the pencil clutched in their classmate's hand.

G R Y. . . .

"O.K., we're starting," Jocelyn announced. But they didn't start. For all their impatience, they knew the rule of the listening center: You don't start listening to the story until everyone is ready.

"Oh, *man*," Henry said. He grabbed his face and lowered his head to the desk with a clunk.

C A T E R. . . .

"Let's begin!" Jocelyn said.

"I'm almost done!" Abigail was hopping up and down now. "Don't press it!" She bounced from foot to foot, still writing: **P I** L. . . .

"I'm pressing it!" Henry said. His finger hovered over the play button on the CD player . . . but it did not fall, not until Abigail etched out her last few letters and put on her headphones. Only then, finally, could the three of them turn the pages together and listen to "The Very Hungry Caterpillar."

When the CD finished, each child took a piece of paper and drew three pictures to illustrate what happened at the beginning, in the middle and at the end of the book. Then they captioned each one, first drawing a series of horizontal lines under the pictures, one for each word, and then writing out each word, or an approximation thereof: For "butterfly," Abigail wrote "btrfli." Their language skills were pretty impressive for kindergarten students. But for the teachers and child psychologists running the program in which they were enrolled, those skills were considered secondary — not irrelevant, but not as important as the skills the children displayed *before* the story started, when all three were wrestling with themselves, fighting to overcome their impulses — in Abby's case, the temptation to give up on writing out the whole title and just submit to the pleas of her friends; for Jocelyn and Henry, the urge to rip the pencil out of Abby's hand and start the CD already.

Over the last few years, a new buzz phrase has emerged among scholars and scientists who study early-childhood development, a phrase that sounds more as if it belongs in the boardroom than the classroom: *executive function*. Originally a neuroscience term, it refers to the ability to think straight: to order your thoughts, to process information in a coherent way, to hold relevant details in your short-term memory, to avoid distractions and mental traps and focus on the task in front of you. And recently, cognitive psychologists have come to believe that executive function, and specifically the skill of self-regulation, might hold the answers to some of the most vexing questions in education today.

To Vygotsky, dramatic play was the arena where children's actions were most

TIGHTLY RESTRICTED.

When a boy acts out the role of a daddy making breakfast, he is limited by all the rules of daddy-ness.

The ability of young children to control their emotional and cognitive impulses, it turns out, is a remarkably strong indicator of both short-term and long-term success, academic and otherwise. In some studies, self-regulation skills have been shown to predict academic achievement more reliably than I.Q. tests. The problem is that just as we're coming to understand the importance of self-regulation skills, those skills appear to be in short supply among young American children. In one recent national survey, 46 percent of kindergarten teachers said that at least half the kids in their classes had problems following directions. In another study, Head Start teachers reported that more than a quarter of their students exhibited serious self-control-related negative behaviors, like kicking or threatening other students, at least once a week. Walter Gilliam, a professor at Yale's child-study center, estimates that each year, across the country, more than 5,000 children are expelled from pre-K programs because teachers feel unable to control them.

There is a popular belief that executive-function skills are fixed early on, a function of genes and parenting, and that other than medication, there's not much that teachers and professionals can do to affect children's impulsive behavior. In fact, though, there is growing evidence that the opposite is true, that executive-function skills are relatively malleable — quite possibly more malleable than I.Q., which is notoriously hard to

Paul Tough is an editor of the magazine and the author of "Whatever It Takes: Geoffrey Canada's Quest to Change Harlem and America," which is out in paperback this month.

 PHOTOGRAPH BY GILLIAN LAUB FOR THE NEW YORK TIMES. ILLUSTRATION BY ROBERT SAMUEL HANSON.

increase over a sustained period. In laboratory studies, research psychologists have found that with executive function, practice helps; when children or adults repeatedly perform basic exercises in cognitive self-regulation, they get better at it. But when researchers try to take those experiments out of the lab and into the classroom, their success rate is much lower. Angela Duckworth, a psychologist at the University of Pennsylvania, has spent the last seven years trying to find reliable, repeatable methods to improve self-control in children. When I spoke to her recently, she told me about a six-week-long experiment that she and some colleagues conducted in 2003 with 40 fifth-grade students at a school in Philadelphia.

"We did everything right," she told me: led the kids through self-control exercises, helped them reorganize their lockers, gave them rewards for completing their homework. And at the end of the experiment, the students dutifully reported that they now had more self-control than when they started the program. But in fact, they did not: the children who had been through the intervention did no better on a variety of measures than a control group at the same school. "We looked at teacher ratings of self-control, we looked at homework completion, we looked at standardized achievement tests, we looked at G.P.A., we looked at whether they were late to class more," Duckworth explained. "We got zero effect on everything." Despite that failure, Duckworth says she is convinced that it is possible to boost executive function among children — she just thinks it will require a more complex and thoroughgoing program than the one that she and her colleagues employed. "It's not impossible," she concludes, "but it's damn hard."

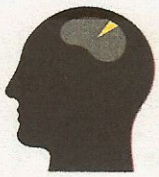
Which is why Abigail, Henry and Jocelyn are potentially so important. They and their classmates are enrolled in Tools of the Mind, a relatively new program dedicated to improving the self-regulation abilities of young children, starting as early as age 3. Tools of the Mind is based on the teachings of Lev Vygotsky, a Russian psychologist who died of tuberculosis in 1934, at age 38, and whose educational theories and methods were, until recently, little known in the United States. Over the past 15 years, Deborah Leong and Elena Bodrova, scholars of child development based in Denver, have turned Vygotsky's philosophy into a full-time curriculum for prekindergarten and kindergarten students, complete with training manuals and coaches and professional-development classes for teachers. Tools of the Mind has grown steadily — though its expansion has sped up in the past few years — and it now is being used to teach 18,000 prekindergarten and kindergarten students in 12 states around the country. Leong and Bodrova say they believe they have found the answer to the problem that has bedeviled Duckworth and other psychologists for so long. Their program, they say, can reliably teach self-regulation skills to pretty much any child — poor or rich; typical achievers as well as many of those who are considered to have special needs. (They make the claim that many kids given diagnoses of A.D.H.D. would not need Ritalin if they were enrolled in Tools of the Mind.) And if Leong and Bodrova are right, those improved self-regulation skills will lead not only to fewer classroom meltdowns and expulsions in prekindergarten and kindergarten; they will also lead to better reading and math scores later on.

At the heart of the Tools of the Mind methodology is a simple but surprising idea: that the key to developing self-regulation is play, and lots of it. But not just any play. The necessary ingredient is what Leong and Bodrova call "mature dramatic play": complex, extended make-believe scenarios, involving multiple children and lasting for hours, even days. If you want to succeed in school and in life, they say, you first need to do what Abigail and Jocelyn and Henry have done every school day for the past two years: spend hour after hour dressing up in firefighter hats and wedding gowns, cooking make-believe hamburgers and pouring nonexistent tea, doing the hard, serious work of playing pretend.

Over the last decade or so, the central debate in the field of early-childhood education has been between one group that favors what you might call a preacademic approach to prekindergarten and kindergarten and another group that contends that the point of school in those early years is not to prepare for academic study; it is to allow children to explore the world, learn social skills and have free, unconstrained fun. The preacademic camp began to dominate the debate in the late 1990s, drawing on some emerging research that showed that children's abilities at the beginning of kindergarten were powerful predictors of later success. If a child reached his 5th birthday well behind his peers in measures of cognitive ability, this research showed, he would most likely never catch up. The good news in the research was that if you exposed struggling children to certain intensive reading and math interventions in prekindergarten and kindergarten, when their minds were still at their most pliable, you could significantly reduce or even eliminate that lag. And so the answer, to many scholars and policy makers, was clear: there was no time to waste in those early years on Play-Doh and fingerpainting, not when kids, and especially disadvantaged kids, could be making such rapid advances in the critical cognitive skills they needed.

More recently, though, a backlash has been growing against the preacademic approach among educators and child psychologists who argue that it misses the whole point of early-childhood education. "Kindergarten has ceased to be a garden of delight and has become a place of stress and distress," warned a report released in March by a research group called the Alliance for Childhood, which is advised by some of the country's most esteemed progressive-education scholars. There is now too much testing and too little free time, the report argues, and kids are being forced to try to read before they are ready. The solution, according to the report's authors, is a return to ample doses of "unstructured play" in kindergarten. If kids are allowed to develop at their own paces, they will be happier and healthier and less stressed out. And there will still be plenty of time later on to learn how to read.

On the surface, Bodrova and Leong would seem to belong to the second camp. They say, after all, that play should have a central place in early-childhood classrooms. And they do find fault with the academic approach, arguing that in practice, many of the early-childhood academic initiatives that have been introduced in the No Child Left Behind era have failed to produce any significant improvement in academic skills. At the same time, they don't agree that the solution is unstructured free play. The romantic idea that children are born with flowering imaginations and a natural instinct for make-believe is simply wrong, they say. Especially these days, they contend, when children spend more time in front of screens and less time in



WHAT I'D DO

Beyond Testing

The single biggest problem in American education is that **no one agrees on why we educate**. Faced with this lack of consensus, policy makers define good education as higher test scores. But higher test scores are not a definition of good education. Students can get higher scores in reading and mathematics yet remain **completely ignorant** of science, the arts, civics, history, literature and foreign languages. • Why do we educate? We educate because we want citizens who are capable of taking responsibility for their lives and for our democracy. **We want citizens who understand** how their government works, **who are knowledgeable** about the history of their nation and other nations. We need citizens who are thoroughly educated in science. We need people who can communicate in other languages. We must ensure that every young person has the chance to engage in the arts. • But because of our narrow-minded utilitarianism, we have forgotten what good education is.

DIANE RAVITCH

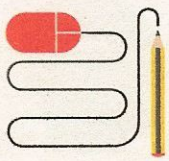
Ravitch is a historian. Her book "The Death and Life of the Great American School System" will be published in February.

unsupervised play, kids need careful adult guidance and instruction before they are able to play in a productive way.

Bodrova and Leong began working together with early-childhood teachers in 1992, soon after Bodrova immigrated from Russia to be a visiting professor at Metropolitan State College of Denver, where Leong was a professor of child development. When they visited local classrooms, they were struck by how out of control things often seemed. It was a period when preschool and kindergarten teachers were taught to "follow the child's lead," to let children guide the learning process with their own interests and unfettered imaginations. In practice, Bodrova and Leong observed, classrooms were often chaotic free-for-alls.

Bodrova and Leong had both studied Vygotsky, and they discussed whether some of his methods might help improve the climate of these classrooms. For Vygotsky, the real purpose of early-childhood education was not to learn content, like the letters of the alphabet or the names of shapes and colors and animals. The point was to learn how to think. When children enter preschool, Vygotsky wrote, they are "slaves to their environment," unable to control their reactions or direct their interests, responding to whatever shiny objects are put in front of them. Accordingly, the most important goal of prekindergarten is to teach children how to master their thoughts. And the best way for children to do that, Vygotsky believed, especially at this early age, is to employ various tools, tricks and habits that train the mind to work at a higher level. So Tools of the Mind students learn to use "private speech" — to talk to themselves as they do a difficult task (like, say, forming the letter W), to help themselves remember what step comes next (*down, up, down, up*). They use "mediators": physical objects that remind them how to do a particular task, like CD-size cards, one with a pair of lips and one with an ear, that signify whose turn it is to read aloud in Buddy Reading and whose turn it is to listen. But more than anything, they use play.

Most of Vygotsky's counterparts in the field of child psychology, including influential figures like Jean Piaget and Maria Montessori, held that imaginary play was an immature form of expression, a preliminary stage of development. But Vygotsky maintained that at 4 or 5, a child's ability to play creatively with other children was in fact a better gauge of her future academic success than any other indicator, including her vocabulary, her counting skills or her knowledge of the alphabet. Dramatic play, he said, was the training ground where children learned to regulate themselves, to conquer their own unruly minds. In the United States, we often associate play with freedom, but to Vygotsky, dramatic play was actually the arena where children's actions were most tightly restricted. When a young boy is acting out the role of a daddy making breakfast, he is limited by all the rules of daddy-ness. Some of those limitations come from his playmates: if he starts acting like a baby (or a policeman or a dinosaur) in the middle of making breakfast, the other children will be sure to steer him back to the eggs and bacon. But even beyond that explicit peer pressure, Vygotsky would say, the child is guided by the basic principles of play. Make-believe isn't as stimulating and satisfying — it simply isn't as much fun — if you don't stick to your role. And when children follow the rules of make-believe and push one another to follow those rules, he said, they develop important habits of self-control.



WHAT I'D DO

Tech Is The Key

Technology has transformed communications, increased the efficiency of retailing and helped elect a president. But because **education is largely protected from incentives** and consequences, it lags in embracing technology. • That must and will change. At a New York City pilot program, School of One, for example, each student has a daily "playlist" tailored to their instructional level, interests and learning style. The school blends online learning, small group sessions and tutoring. It's a vivid picture of **the shift from age cohorts slogging through a textbook to personalized digital learning.** • This fall, about two million K-12 students will be learning online at home and at school (about 4 percent of the national student body). By 2020, I believe most high-school students will do most of their learning online. It shouldn't take that long, but it will. • New tools already make possible a generation of schools that blend the best of online and on-site learning. They will be **less expensive and more fun**, delivering excellence with equity.

TOM VANDER ARK

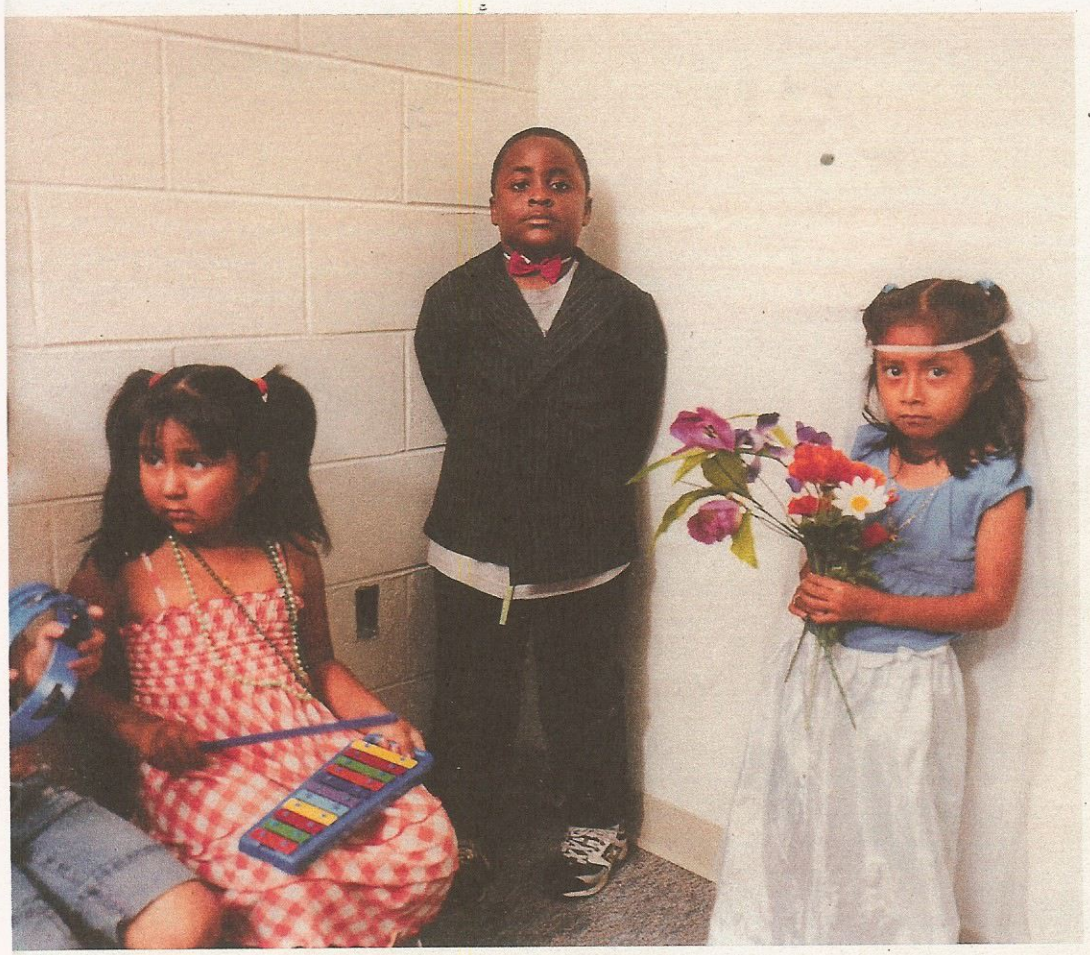
Vander Ark invests in edu-entrepreneurs and blogs at EdReformer.com.

Bodrova and Leong drew on research conducted by some of Vygotsky's followers that showed that children acting out a dramatic scene can control their impulses much better than they can in nonplay situations. In one experiment, 4-year-old children were first asked to stand still for as long as they could. They typically did not make it past a minute. But when the kids played a make-believe game in which they were guards at a factory, they were able to stand at attention for more than four minutes. In another experiment, prekindergarten-age children were asked to memorize a list of unrelated words. Then they played "grocery store" and were asked to memorize a similar list of words — this time, though, as a shopping list. In the play situation, on average, the children were able to remember twice as many words. Bodrova and Leong say they see the same effect in Tools of the Mind classrooms: when their students spend more time on dramatic play, not only does their level of self-control improve, but so do their language skills.

In the past, when psychologists (or parents or teachers or priests) tried to improve children's self-control, they used the principles of behaviorism, reinforcing good and bad behaviors with rewards and punishments. The message to kids was that terrible things would happen if they didn't control their impulses, and the role of adults, whether parents or preschool teachers, was to train children by praising them for their positive self-control ("Look at how well Cindy is sitting!") and criticizing them for their lapses. And in most American prekindergartens and kindergartens, behaviorism, in some form, is still the dominant method. But Bodrova and Leong say that those "external reinforcement systems" create "other-directed regulation" — good behavior done not from some internal sense of control but for the approval of others, to avoid punishment and win praise and treats. And that, they say, is a kind of regulation that is not particularly valuable or lasting. Children learn only how to be obedient, how to follow orders, not how to understand and regulate their own impulses. The ultimate goal of Tools of the Mind is not emotional or physical self-regulation; it is cognitive self-regulation — not the ability to avoid grabbing a toy from the kid next to you (though that's an important first step), but the much more subtle ability to avoid falling for a deceptively attractive wrong answer on a test or to concentrate on an arduous mental task. And those abilities are more difficult to affect by other-directed regulation. Because the abilities are more abstract, they are less likely to be elicited by rewards. Kids are rarely able to organize their thoughts better in order to get an ice-cream cone.

As a result, many practices that most prekindergarten teachers consider essential are more or less banned from Tools of the Mind classrooms. There are no gold stars, no telling the class that they are all going to have to wait until Jimmy is quiet; even timeouts are discouraged. When there is a conflict — when, say, Billy grabs a toy from Jamal — the Tools of the Mind teacher's first questions are supposed to be: What was it in the classroom that made it hard for Billy to control himself? And what mediators could help him do better next time? The teacher does remind Billy that there is a rule and he broke it, but she doesn't make a big deal out of the incident. "We pretty much try not to use this whole concept of misbehavior," Bodrova told me. "These kids are not

 PHOTOGRAPH BY GILLIAN LAUB FOR THE NEW YORK TIMES. ILLUSTRATION BY ROBERT SAMUEL HANSON.



Dramatic play, believed to improve cognitive self-control, is a central part of the Tools of the Mind curriculum.

born criminals. Even if they do something that is completely out of bounds, they do it because they can't stop themselves."

There are not yet firm experimental data that prove that Tools of the Mind works. But two early studies that began in the late 1990s in Denver showed some promising results: After a year in the program, students did significantly better than a similar group on basic measures of literacy ability. And more recent studies, including one overseen by Adele Diamond, a professor at the University of British Columbia who is one of the most prominent researchers in the field of cognitive self-control, have shown that Tools students consistently score higher on tests requiring executive function. Angela Duckworth told me that when she read Diamond's report, which was published in Science in 2007, "I got very excited." Her failed 2003 study had persuaded her that the usual approach to self-control in early-childhood education, a brief intervention here or there, wouldn't work. But Tools of the Mind was clearly a different strategy. "It's an immersion approach," she said. "It's not that these kids are pulled out and they do self-control for half an hour a day. Everything is about self-regulation, every single moment. Everything about the culture that the classroom creates reinforces that."

It's one of the reasons that visiting a Tools of the Mind classroom can cause moments of cognitive dissonance. While there's a lot of dressing up and playing with blocks, plenty of messing around with sand tables and Legos and jigsaw puzzles, there are also a few activities that seem not just grown-up but protocorporate, borrowed directly from the modern office. Every morning, before embarking on the day's make-believe play, each child takes a colored marker and a printed form called a play plan and draws or writes his declaration of intent for that day's play: "I am going to drive the choo-choo train"; "I am going to make a sand castle"; "I am going to take the dollies to the beach." At the beginning of prekindergarten, children are coached on dramatic play — called Make-Believe Play Practice — with the teacher leading the children, step by step, through the mechanics of pretending. (The training manual describes how a teacher might coach a child to feed a baby doll: "I'm pretending my baby is crying. Is yours? What should we say?") In kindergarten, every student carries around a clipboard with the day's activities on it — that's what Abigail was writing on at the listening center — and each Friday, every child has a 5- or 10-minute "learning conference" with his teacher, a mini-performance review in which the children discuss what they accomplished in the last week, where they fell short and what skills they want to work on in the week to come. All of these practices, along with plenty of others that fill the day, are designed to reinforce habits of self-control.

This comprehensiveness creates an extra level of complication for researchers examining Tools of the Mind. There are now four separate large-scale long-term experimental studies under way across the country. But even if the researchers do find, in a few years, that the program has long-term effects on executive function and school performance, they still won't know exactly which techniques in the Tools of the Mind package are the most useful, or whether they all need to be employed in concert in order to have an effect. Stephanie M. Carlson, a professor of child psychology at the University of Minnesota who studies executive function, told me she is impressed with what she has seen so far of Tools of the Mind. But, she pointed out, "it's a really heavy-hitting approach, and there are a lot of different techniques used during the course of the day. What we don't know is what the secret ingredient is." It *might* be all the dramatic play, but it also might be the literacy practice, or the learning conferences, or something else entirely.

In the end, the most lasting effect of the Tools of the Mind studies may be to challenge some of our basic ideas about the boundary between work and play. Today, play is seen by most teachers and education scholars as a break from hard work or a reward for positive behaviors, not a place to work on cognitive skills. But in Tools of the Mind classrooms, that distinction disappears: work looks a lot like play, and play is treated more like work. When I asked Duckworth about this, she said it went to the heart of what was new and potentially important about the program. "We often think about play as relaxing and doing what you want to do," she explained. "Maybe it's an American thing: We work really hard, and then we go on vacation and have fun. But in fact, very few truly pleasurable moments come from complete hedonism. What Tools does — and maybe what we all need to do — is to blur the line a bit between what is work and what is play. Just because something is effortful and difficult and involves some amount of constraint doesn't mean it can't be fun." ◆