

How Kids Learn

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Ages 5 through 8 are wonder years. That's when children begin learning to study, to reason, to cooperate. We can put them in desks and drill them all day. Or we can keep them moving, touching, exploring. The experts favor a hands-on approach, but changing the way schools teach isn't easy. The stakes are high and parents can help.

With Howard Manly in Atlanta and bureau reports

It's time for number games in Janet Gill's kindergarten class at the Greenbrook School in South Brunswick, N.J. With hardly any prodding from their teacher, 23 five- and six-year-olds pull out geometric puzzles, playing cards and counting equipment from the shelves lining the room. At one round table, a group of youngsters fits together brightly colored wooden shapes. One little girl forms a hexagon out of triangles. The others, obviously impressed, gather round to count up how many parts are needed to make the whole.

After about half an hour, the children get ready for story time. They pack up their counting equipment and settle in a circle around Gill. She holds up a giant book about a zany character called Mrs. Wishy-washy who insists on giving farm animals a bath. The children recite the whimsical lines along with Gill, obviously enjoying one of their favorite tales. (The hallway is lined with drawings depicting the children's own interpretation of the book; they've taken a few literary liberties, like substituting unicorns and dinosaurs for cows and pigs.) After the first reading, Gill asks for volunteers to act out the various parts in the book. Lots of hands shoot up. Gill picks out four children and

they play their parts enthusiastically. There isn't a bored face in the room.

This isn't reading, writing and arithmetic the way most people remember it. Like a growing number of public- and private-school educators, the principals and teachers in South Brunswick believe that children between the ages of 5 and 8 have to be taught differently from older children. They recognize that young children learn best through active, hands-on teaching methods like games and dramatic play. They know that children in this age group develop at varying rates and schools have to allow for these differences. They also believe that youngsters' social growth is as essential as their academic achievement. Says Joan Warren, a teacher consultant in South Brunswick: "Our programs are designed to fit the child instead of making the child fit the school."

Educators call this kind of teaching "developmentally appropriate practice"—a curriculum based on what scientists know about how young children learn. These ideas have been slowly emerging through research conducted over the last century, particularly in the past 30 years. Some of the tenets have appeared

The Lives and Times of Children

Each youngster proceeds at his own pace, but the learning curve of a child is fairly predictable. Their drive to learn is awesome, and careful adults can nourish it. The biggest mistake is pushing a child too hard, too soon.

● Infants and Toddlers

They're born to learn. The first important lesson is trust, and they learn that from their relationships with their parents or other caring adults. Later, babies will begin to explore the world around them and experiment with independence. As they mature, infants slowly develop gross motor (sitting, crawling, walking) and fine motor (picking up tiny objects) skills. Generally, they remain egocentric and are unable to share or wait their turn. New skills are perfected through repetition, such as the babbling that leads to speaking.

■ 18 months to 3 years

Usually toilet training becomes the prime learning activity. Children tend to concentrate on language development and large-muscle control through activities like climbing on jungle gyms. Attention spans lengthen enough to listen to uncomplicated stories and carry on conversations. Vocabulary expands to about 200 words. They enjoy playing with one other child, or a small group, for short periods, and learn that others have feelings too. They continue to look to parents for encouragement and protection, while beginning to accept limits on their behavior.

▲ 3-year-olds

Generally, they're interested in doing things for themselves and trying to keep up with older children. Their ability to quietly listen to stories and music remains limited. They begin telling stories and jokes. Physical growth slows, but large-muscle development continues as children run, jump and ride tricycles. They begin to deal with cause and effect; it's time to plant seeds and watch them grow.

● 4-year-olds

They develop better small motor skills, such as cutting with scissors, painting, working with puzzles and building things. They can master colors, sizes and shapes. They should be read to and should be encouraged to watch others write; let them scribble on paper but try to keep them away from walls.

■ 5-year-olds

They begin to understand counting as a one-

to-one correlation. Improved memories make it easier for them to recognize meaningful words, and with sharper fine motor skills, some children will be able to write their own names.

▲ Both 4s and 5s

Both groups learn best by interacting with people and concrete objects and by trying to solve real problems. They can learn from stories and books, but only in ways that relate to their own experience. Socially, these children are increasingly interested in activities outside their immediate family. They can play in groups for longer periods, learning lessons in cooperation and negotiation. Physically, large-muscle development continues, and skills such as balancing emerge.

● 6-year-olds

Interest in their peers continues to increase, and they become acutely aware of comparisons between themselves and others. It's a taste of adolescence: does the group accept them? Speech is usually well developed, and children are able to joke and tease. They have a strong sense of true and false and are eager for clear rules and definitions. However, they have a difficult time differentiating between minor and major infractions. Generally, children this age are more mature mentally than physically and unable to sit still for long periods. They learn better by firsthand experiences. Learning by doing also encourages children's "disposition" to use the knowledge and skills they're acquiring.

■ 7- to 8-year-olds

During this period, children begin developing the ability to think about and solve problems in their heads, but some will continue to rely on fingers and toes to help them find the right answer. Not until they're 11 are most kids capable of thinking purely symbolically; they still use real objects to give the symbols—such as numbers—meaning. At this stage they listen better and engage in give and take. Generally, physical growth continues to slow, while athletic abilities improve—children are able to hit a softball, skip rope or balance on a beam. Sitting for long periods is still more tiring than running and jumping.

under other names—progressivism in the 1920s, open education in the 1970s. But they've never been the norm. Now, educators say that may be about to change. "The entire early-childhood profession has amassed itself in unison behind these principles," says Yale education professor Sharon Lynn Kagan. In the

last few years, many of the major education organizations in the country—including the National Association for the Education of Young Children and the National Association of State Boards of Education—have endorsed remarkably similar plans for revamping kindergarten through third grade.

Bolstered by opinions from the experts, individual states are beginning to take action. Both California and New York have appointed task forces to recommend changes for the earliest grades. And scores of individual school districts like South Brunswick, figuring that young minds are a terrible thing to waste, are pushing ahead on their own.

The evidence gathered from research in child development is so compelling that even groups like the Council for Basic Education, for years a major supporter of the traditional format, have revised their thinking. "The idea of putting small children in front of workbooks and asking them to sit at their desks all day is a nightmare vision," says Patte Barth, associate editor of Basic Education, the council's newsletter.

At this point, there's no way of knowing how soon change will come or how widespread it will be. However, there's a growing recognition of the importance of the early grades. For the past few years, most of the public's attention has focused on older children, especially teenagers. "That's a Band-Aid kind of approach," says Anne Dillman, a member of the New Jersey State Board of Education. "When the product doesn't come out right, you try and fix it at the end. But we really have to start at the beginning." Demographics have contributed to the sense of urgency. The baby boomlet has replaced the baby-bust generation of the 1970s. More kids in elementary school means more parents asking if there's a better way to teach. And researchers say there is a better way. "We've made remarkable breakthroughs in understanding the development of children, the development of learning and the climate that enhances that," says Ernest Boyer of The Carnegie Foundation for the Advancement of Teaching. But, he adds, too often, "what we know in theory and what we're doing in the classroom are very different."

The early grades pose special challenges because that's when children's attitudes toward school and learning are shaped, says Tufts University psychologist David Elkind. As youngsters move from home or preschool into the larger, more competitive world of elementary school, they begin to make judgments about their own abilities. If they feel inadequate, they may give up. Intellectually, they're also in transition, moving from the intensely physical exploration habits of infancy and toddlerhood to more abstract reasoning. Children are born wanting to learn. A baby can spend hours studying his hands; a toddler is fascinated by watching sand pour through a sieve. What looks like play to an adult is actually the work of childhood, developing an understanding of the world. Studies show that the most effective way to teach young kids is to capitalize on their natural inclination to learn through play.

But in the 1980s, many schools have tried to do just the opposite, pressure instead of challenge. The "back

to basics" movement meant that teaching methods intended for high school students were imposed on first graders. The lesson of the day was more: more homework, more tests, more discipline. Children should be behind their desks, not roaming around the room. Teachers should be at the head of the classrooms, drilling knowledge into their charges. Much of this was a reaction against the trend toward open education in the '70s. Based on the British system, it allowed children to develop at their own pace within a highly structured classroom. But too many teachers and principals who tried open education thought that it meant simply tearing down classroom walls and letting children do whatever they wanted. The results were often disastrous. "Because it was done wrong, there was a backlash against it," says Sue Bredekamp of the National Association for the Education of Young Children.

At the same time, parents, too, were demanding more from their elementary schools. By the mid-1980s, the majority of 3- and 4-year-olds were attending some form of pre-school. And their parents expected these classroom veterans to be reading by the second semester of kindergarten. But the truth is that many 5-year-olds aren't ready for reading—or most of the other academic tasks that come easily to older children—no matter how many years of school they've completed. "We're confusing the numbers of years children have been in school with brain development," says Martha Denckla, a professor of neurology and pediatrics at Johns Hopkins University. "Just because a child goes to day care at age 3 doesn't mean the human brain mutates into an older brain. A 5-year-old's brain is still a 5-year-old's brain."

As part of the return to basics, parents and districts demanded hard evidence that their children were learning. And some communities took extreme measures. In 1985 Georgia became the first state to require 6-year-olds to pass a standardized test before entering first grade. More than two dozen other states proposed similar legislation. In the beginning Georgia's move was hailed as a "pioneering" effort to get kids off to a good start. Instead, concedes state school superintendent Werner Rogers, "We got off on the wrong foot." Five-year-olds who used to spend their days finger-painting or singing were hunched over ditto sheets, preparing for the big exam. "We would have to spend a month just teaching kids how to take the test," says Beth Hunnings, a kindergarten teacher in suburban Atlanta. This year Georgia altered the tests in favor of a more flexible evaluation; other states have changed their minds as well.

The intense, early pressure has taken an early toll. Kindergartners are struggling with homework. First graders are taking spelling tests before they even understand how to read. Second graders feel like failures. "During this critical period," says David Elkind in his book "Miseducation," "the child's bud-

In Japan, First Grade Isn't a Boot Camp

Japanese students have the highest math and science test scores in the world. More than 90 percent graduate from high school. Illiteracy is virtually nonexistent in Japan. Most Americans attribute this success to a rigid system that sets youngsters on a lock-step march from cradle to college. In fact, the early years of Japanese schooling are anything but a boot camp; the atmosphere is warm and nurturing. From kindergarten through third grade, the goal is not only academic but also social—teaching kids to be part of a group so they can be good citizens as well as good students. “Getting along with others is not just a means for keeping the peace in the classroom but something which is a valued end in itself,” says American researcher Merry White, author of “The Japanese Educational Challenge.”

Lessons in living and working together grow naturally out of the Japanese culture. Starting in kindergarten, youngsters learn to work in teams, with brighter students often helping slower ones. All children are told they can succeed if they persist and work hard. Japanese teachers are expected to be extremely patient with young children. They go over lessons step by step and repeat instructions as often as necessary. “The key is not to scold [children] for small mistakes,” says Yukio Ueda, princi-

pal of Mita Elementary School in Tokyo. Instead, he says, teachers concentrate on praising and encouraging their young charges.

As a result, the classrooms are relaxed and cheerful, even when they're filled with rows of desks. On one recent afternoon a class of second graders at Ueda's school was working on an art project. Their assignment was to build a roof with poles made of rolled-up newspapers. The children worked in small groups, occasionally asking their teacher for help. The room was filled with the sound of eager youngsters chatting about how to get the job done. In another second-grade class, the subject was math. Maniko Inoue, the teacher, suggested a number game to practice multiplication. After a few minutes of playing it, one boy stood up and proposed changing the rules just a bit to make it more fun. Inoue listened carefully and then asked if the other students agreed. They cheered, “Yes, yes,” and the game continued according to the new rules.

Academics are far from neglected in the early grades. The Education Ministry sets curriculum standards and goals for each school year. For example, third graders by the end of the year are supposed to be able to read and write 508 characters (out of some 2,000 considered essential to basic literacy). Teachers have time for play and

lessons: Japanese children attend school for 240 days, compared with about 180 in the United States.

Mothers' role: Not all the teaching goes on in the classroom. Parents, especially mothers, play a key role in education. Although most kindergartens do not teach writing or numbers in any systematic way, more than 80 percent of Japanese children learn to read or write to some extent before they enter school. “It is as if mothers had their own built-in curriculum,” says Shigefumi Nagano, a director of the National Institute for Educational Research. “The first game they teach is to count numbers up to 10.”

For all their success in the early grades, the Japanese are worried they're not doing well enough. After a recent national curriculum review, officials were alarmed by what Education Minister Takeo Nishioka described as excessive “bullying and misconduct” among children—the result, according to some Japanese, of too much emphasis on material values. So three years from now, first and second graders will no longer be studying social studies and science. Instead, children will spend more time learning how to be good citizens. That's “back to basics”—Japanese style.

BARBARA KANTROWITZ with
HIDEKO TAKAYAMA in Tokyo

ding sense of competence is frequently under attack, not only from inappropriate instructional practices . . . but also from the hundred and one feelings of hurt, frustration and rejection that mark a child's entrance into the world of schooling, competition and peer-group involvement.” Adults under similar stress can rationalize setbacks or put them in perspective based on previous experiences; young children have none of these defenses. Schools that demand too much too soon are setting kids off on the road to failure.

It doesn't have to be this way. Most experts on child development and early-childhood education believe that young children learn much more readily if the teaching methods meet their special needs:

Differences in thinking: The most important ingredient of the nontraditional approach is hands-on learning. Research begun by Swiss psychologist Jean Piaget indicates that somewhere between the ages of 6 and 9, children begin to think abstractly instead of concretely. Younger children learn much more by touching and

seeing and smelling and tasting than by just listening. In other words, 6-year-olds can easily understand addition and subtraction if they have actual objects to count instead of a series of numbers written on a blackboard. Lectures don't help. Kids learn to reason and communicate by engaging in conversation. Yet most teachers still talk at, not with, their pupils.

Physical activity: When they get to be 10 or 11, children can sit still for sustained periods. But until they are physically ready for long periods of inactivity, they need to be active in the classroom. “A young child has to make a conscious effort to sit still,” says Denckla. “A large chunk of children can't do it for very long. It's a very energy-consuming activity for them.” Small children actually get more tired if they have to sit still and listen to a teacher talk than if they're allowed to move around in the classroom. The frontal lobe, the part of the brain that applies the brakes to children's natural energy and curiosity, is still immature in 6- to 9-year-olds, Denckla says. As the lobe develops, so

does what Denckla describes as "boredom tolerance." Simply put, learning by doing is much less boring to young children.

Language development: In this age group, experts say language development should not be broken down into isolated skills—reading, writing and speaking. Children first learn to reason and to express themselves by talking. They can dictate stories to a teacher before they actually read or write. Later, their first attempts at composition do not need to be letter perfect; the important thing is that they learn to communicate ideas. But in many classrooms, grammar and spelling have become more important than content. While mastering the technical aspects of writing is essential as a child gets older, educators warn against emphasizing form over content in the early grades. Books should also be interesting to kids—not just words strung together solely for the purpose of pedag-

ogy. Psychologist Katherine Nelson of the City University of New York says that her extensive laboratory and observational work indicates that kids can learn language—speaking, writing or reading—only if it is presented in a way that makes sense to them. But many teachers still use texts that are so boring they'd put anybody to sleep.

Socialization: A youngster's social development has a profound effect on his academic progress. Kids who have trouble getting along with their classmates can end up behind academically as well and have a higher incidence of dropping out. In the early grades especially, experts say youngsters should be encouraged to work in groups rather than individually so that teachers can spot children who may be having problems making friends. "When children work on a project," says University of Illinois education professor Lillian Katz, "they learn to work together, to disagree, to speculate,



The early years of a child's education are indeed wonder years. They begin learning to socialize, to study, and to reason. More and more education experts are favoring a hands-on approach to introducing young children to the mysteries of their surroundings.

4. LEARNING AND REMEMBERING

to take turns and de-escalate tensions. These skills can't be learned through lecture. We all know people who have wonderful technical skills but don't have any social skills. Relationships should be the first 'R.'

Feelings of competence and self-esteem: At this age, children are also learning to judge themselves in relation to others. For most children, school marks the first time that their goals are not set by an internal clock but by the outside world. Just as the 1-year-old struggles to walk, 6-year-olds are struggling to meet adult expectations. Young kids don't know how to distinguish between effort and ability, says Tynette Hills, coordinator of early-childhood education for the state of New Jersey. If they try hard to do something and fail, they may conclude that they will never be able to accomplish a particular task. The effects of obvious methods of comparison, such as posting grades, can be serious. Says Hills: "A child who has had his confidence really damaged needs a rescue operation."

Rates of growth: Between the ages of 5 and 9, there's a wide range of development for children of normal intelligence. "What's appropriate for one child may not be appropriate for another," says Dr. Perry Dyke, a member of the California State Board of Education. "We've got to have the teachers and the staff reach children at whatever level they may be at . . . That takes very sophisticated teaching." A child's pace is almost impossible to predict beforehand. Some kids learn to read on their own by kindergarten; others are still struggling to decode words two or three years later. But by the beginning of the fourth grade, children with very different histories often read on the same level. Sometimes, there's a sudden "spurt" of learning, much like a growth spurt, and a child who has been behind all year will catch up in just a few weeks. Ernest Boyer and others think that multigrade classrooms, where two or three grades are mixed, are a good solution to this problem—and a way to avoid the "tracking" that can hurt a child's self-esteem. In an ungraded classroom, for example, an older child who is having problems in a particular area can practice by tutoring younger kids.

Putting these principles into practice has never been easy. Forty years ago Milwaukee abolished report cards and started sending home ungraded evaluations for kindergarten through third grade. "If anything was developmentally appropriate, those ungraded classes were," says Millie Hoffman, a curriculum specialist with the Milwaukee schools. When the back-to-basics movement geared up nationally in the early 1980s, the city bowed to pressure. Parents started demanding letter grades on report cards. A traditional, direct-teaching approach was introduced into the school system after some students began getting low scores on standardized tests. The school board ordered basal readers with controlled vocabularies and contrived stories. Milwaukee kindergarten teachers were so up-

A Primer for Parents

When visiting a school, trust your eyes. What you see is what your child is going to get.

- Teachers should talk to small groups of children or individual youngsters; they shouldn't just lecture.
- Children should be working on projects, active experiments and play; they shouldn't be at their desks all day filling in workbooks.
- ▲ Children should be dictating and writing their own stories or reading real books.
- The classroom layout should have reading and art areas and space for children to work in groups.
- Children should create freehand artwork, not just color or paste together adult drawings.
- ▲ Most importantly, watch the children's faces. Are they intellectually engaged, eager and happy? If they look bored or scared, they probably are.

set by these changes that they convinced the board that their students didn't need most of the standardized tests and the workbooks that go along with the readers.

Some schools have been able to keep the progressive format. Olive School in Arlington Heights, Ill., has had a nontraditional curriculum for 22 years. "We've been able to do it because parents are involved, the teachers really care and the children do well," says principal Mary Stitt. "We feel confident that we know what's best for kids." Teachers say they spend a lot of time educating parents about the teaching methods. "Parents always think school should be the way it was for them," says first-grade teacher Cathy Sauer. "As if everything else can change and progress but education is supposed to stay the same. I find that parents want their children to like school, to get along with other children and to be good thinkers. When they see that happening, they become convinced."

Parental involvement is especially important when schools switch from a traditional to a new format. Four years ago, Anne Norford, principal of the Brownsville Elementary School in Albemarle County, Va., began to convert her school. Parents volunteer regularly and that helps. But the transition has not been completely smooth. Several teachers refused to switch over to the more active format. Most of them have since left the school, Norford says. There's *no question* that some teachers have trouble implementing the developmentally appropriate approach. "Our teachers are not all trained for it," says Yale's Kagan. "It takes a lot of savvy and skill." A successful child-centered classroom seems to function effortlessly as youngsters move from activity to activity. But there's a lot of planning behind it—and that's the responsibility of the individual teacher. "One of the biggest problems," says Norford, "is trying to come up with a program

that every teacher can do—not just the cadre of single people who are willing to work 90 hours a week.” Teachers also have to participate actively in classroom activities and give up the automatic mantle of authority that comes from standing at the blackboard.

Teachers do better when they’re involved in the planning and decision making. When the South Brunswick, N.J., schools decided in the early 1980s to change to a new format, the district spent several years studying a variety of curricula. Teachers participated in that research. A laboratory school was set up in the summer so that teachers could test materials. “We had the support of the teachers because teachers were part of the process,” says teacher consultant Joan Warren.

One residue of the back-to-basics movement is the demand for accountability. Children who are taught in nontraditional classrooms can score slightly lower on commonly used standardized tests. That’s because most current tests are geared to the old ways. Children are usually quizzed on specific skills, such as vocabulary or addition, not on the concepts behind those skills. “The standardized tests usually call for one-word answers,” says Carolyn Topping, principal of Mesa Elementary School in Boulder, Colo. “There may be three words in a row, two of which are misspelled and the child is asked to circle the correctly spelled word. But the tests never ask, ‘Does the child know how to write a paragraph?’ ”

Even if the tests were revised to reflect different kinds of knowledge, there are serious questions about the reliability of tests on young children. The results can vary widely, depending on many factors—a child’s mood, his ability to manipulate a pencil (a difficult skill for many kids), his reaction to the person administering the test. “I’m appalled at all the testing we’re doing of small children,” says Vanderbilt University professor Chester Finn, a former assistant secretary of

education under the Reagan administration. He favors regular informal reviews and teacher evaluations to make sure a student understands an idea before moving on to the next level of difficulty.

Tests are the simplest method of judging the effectiveness of a classroom—if not always the most accurate. But there are other ways to tell if children are learning. If youngsters are excited by what they are doing, they’re probably laughing and talking to one another and to their teacher. That communication is part of the learning process. “People think that school has to be either free play or all worksheets,” says Illinois professor Katz. “The truth is that neither is enough. There has to be a balance between spontaneous play and teacher-directed work.” And, she adds, “you have to have the other component. Your class has to have intellectual life.”

Katz, author of “Engaging Children’s Minds,” describes two different elementary-school classes she visited recently. In one, children spent the entire morning making identical pictures of traffic lights. There was no attempt to relate the pictures to anything else the class was doing. In the other class, youngsters were investigating a school bus. They wrote to the district and asked if they could have a bus parked in their lot for a few days. They studied it, figured out what all the parts were for and talked about traffic rules. Then, in the classroom, they built their own bus out of cardboard. They had fun, but they also practiced writing, problem solving, even a little arithmetic. Says Katz: “When the class had their parents’ night, the teacher was ready with reports on how each child was doing. But all the parents wanted to see was the bus because their children had been coming home and talking about it for weeks.” That’s the kind of education kids deserve. Anything less should get an “F.”

