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As Math Scores Lag, a New Push for the Basics

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Kevin P. Casey for The New York Times

Tests with high marks were posted on a wall at the Kumon Center, a math tutoring franchise, in Mercer County, N.J.

By **TAMAR LEWIN**

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SEATTLE — For the second time in a generation, education officials are rethinking the teaching of math in American schools.

Teaching Math

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The changes are being driven by students' lagging performance on international tests and mathematicians' warnings that more than a decade of so-called reform math — critics call it fuzzy math — has crippled students with its de-emphasizing of basic drills and memorization in favor of allowing children to find their own ways to solve problems.

At the same time, parental unease has prompted ever more families to pay for tutoring, even for young children.

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Shalimar Backman, who put pressure on officials here by starting a parents group called Where's the Math?, remembers the moment she became concerned.

“When my oldest child, an A-plus stellar student, was in sixth grade, I realized he had no idea, no idea at all, how to do long division,” Ms. Backman said, “so I went to school and talked to the teacher, who said, ‘We don’t teach long division; it stifles their creativity.’”

Across the nation, the reconsideration of what should be taught and how has been accelerated by a report in September by the National Council of Teachers of Mathematics, the nation’s leading group of math teachers.

It was a report from this same group in 1989 that influenced a generation of teachers to let children explore their own solutions to problems, write and draw pictures about math, and use tools like the calculator at the same time they learn algorithms.

But this fall, the group changed course, recommending a tighter focus on basic math skills and an end to “mile wide, inch deep” state standards that force schools to teach dozens of math topics in each grade. In fourth grade, for example, the report recommends that the curriculum should center on the “quick recall” of multiplication and division, the area of two-dimensional shapes and an understanding of decimals.

The Bush administration, too, has created a panel to study research on teaching math. It is expected to issue recommendations early next year.

Here in Washington, Gov. Chris Gregoire has asked the State Board of Education to develop new math standards by the end of next year to bring teaching in line with international competition, and a year later to choose no more than three curriculums to replace the dozens of teaching methods now in use. Ms. Gregoire, a Democrat, also wants new math requirements for high school graduation.

In Utah and Florida, too, state education officials are re-examining their math standards and curriculum.

Grass-roots groups in many cities are agitating for a return to basics. Many point to California’s standards as a good model: the state adopted reform math in the early 1990s

but largely rejected it near the end of the decade, a turnaround that led to rising math achievement.

“The Seattle level of concern about math may be unusual, but there’s now an enormous amount of discomfort about fuzzy math on the East Coast, in Maine, Massachusetts and Pennsylvania, and now New Jersey is starting to make noise,” said R. James Milgram, a math professor at [Stanford University](#). “There’s increasing understanding that the math situation in the United States is a complete disaster.”

Schools in New York City use a reform math curriculum, Everyday Mathematics, but some parents there, too, would like to see that changed, a step they are advocating through NYC HOLD, a group of parents and teachers that has a Web site with links to information on math battles nationwide.

A spokesman for the New York City Department of Education said that Everyday Mathematics covered both reform and traditional approaches, emphasizing knowledge of basic algorithms along with conceptual understanding. He added that research gathered recently by the federal Department of Education had found the program to be one of the few in the country for which there was evidence of positive effects on student math achievement.

The frenzy has been prompted in part by the growing awareness that, at a time of increasing globalization, the math skills of children in the United States simply do not measure up: American eighth-graders lag far behind those from Singapore, South Korea, Hong Kong, Taiwan, Japan and elsewhere on the Trends in International Mathematics and Science Study, an international test.

Parental discontent here in Washington State intensified after the announcement in September that only 51 percent of 10th graders passed the math part of state assessment tests, far fewer than showed proficiency in reading or writing.

“Math is on absolutely everybody’s radar in the state right now,” said Ms. Backman, whose Where’s the Math? group drew hundreds of parents and math teachers last month to a forum on K-12 math.

Many parents and teachers remain committed to the goals of reform math, having children understand what they are doing rather than simply memorizing and parroting answers. Traditional math instruction did not work for most students, say reform math proponents like Virginia Warfield, a professor at the [University of Washington](#).

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“It produces people who hate math, who can’t connect the math they are doing with anything in their lives,” Dr. Warfield said. “That’s why we have so many parents who see their children having trouble with math and say ‘Honey, don’t worry. I never could do math either.’”

“In Asian cultures,” she added, “the assumption is that everyone learns mathematics, and of course, parents will help with mathematics.”

But even many of those who admire the goals of reform math want their children to have more drills.

“My mother is a high school math tutor, and her joke is that this math is what’s kept her in business,” said Marcy Berejka, who each week brings Ben, 8, and Dana, 6, to Kumon, a tutoring center based in Japan that has more than a dozen franchises in the Seattle area. “There’s a lot that’s good in the new curriculum, but if you don’t memorize the basic math facts, it gets harder as math gets more complicated.”

The state’s superintendent of public instruction, Terry Bergeson, a supporter of reform math, said in an interview: “I came through the reading wars years ago, and now we’re right in the middle of that with mathematics. It comes back to balance. Of course you need to know your math facts, but you also have to understand what you’re doing. The whole country has been in denial about mathematics, and now we’re sort of at a second Sputnik moment.”

In part, the math wars have grown out of a struggle between professional mathematicians, who say too many American students never master basic math skills, and math educators, who say children who construct their own problem-solving strategies retain their math skills better than those who just memorize the algorithm that produces the correct answer.

After Dr. Milgram of Stanford appeared at a Where’s the Math? meeting, Dr. Warfield, an expert on teaching math educators, wrote in a newsletter that when Dr. Milgram told parents to fight for change, it was “implicit in the instructions that mathematicians who do not agree are classified as mathematics educators (a rung or two below the night custodian).”

The battle here has left many parents frustrated, confused and not sure if they should trust their children’s schools to give them the skills they need. Many have already voted with their feet, enrolling their children in math tutoring.



State Representative Glenn Anderson, [a Republican](#) member of the House education committee who has fought for a more rigorous curriculum, said state data showed that Washington residents spent \$149 million on tutoring and other education support services in 2004, more than three times the \$44 million they spent 10 years earlier.

Kumon, which has a global clientele of more than four million children in 43 countries, focuses on drilling children on basics. Students work their way through hundreds of assignments that move in incremental steps from tracing numerals all the way through differential calculus.

Every week for five years, Tove Burrows has brought her son, Petter, 13, to the Kumon Center in Mercer Island to turn in the worksheets he has done at home, sit down to new drills and pick up a set of assignments for the week ahead.

“If the math curriculum in the schools were different, I would not be doing Kumon,” said Ms. Burrows, whose son is an A student at Islander Middle School. “But I want to make sure he’s mastered the basics, and in school they don’t spend enough time on basics to get that mastery.”

On Mercer Island, an affluent suburb of Seattle that had the state’s best scores on the 10th-grade test, the pendulum has begun to swing toward emphasizing computational skills, especially in high school.

“We’re looking at texts that have more numbers and less language,” said Lisa Eggers, president of the Mercer Island School Board, who at one point sent two of her three children to Kumon. “And we’re one of the few districts where the math scores are going up.”

Even so, seeking outside math help is common in the district, with almost 100 students leaving the high school for math and going instead to nearby private academies for one-on-one tutoring, for which the school give will give them credit.

John Harrison, principal of Mercer Island High School, estimates that as many as 10 percent of his school’s 1,400 students are getting outside math help. “It’s not surprising that math is so important in Seattle, with so many people earning their living at Microsoft or Boeing,” Mr. Harrison said. “Our kids do very well on the state tests, compared to the state averages, but even here, math proficiency is less than reading and writing.”

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