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Are after-school math centers really worth the money?

Parents and education experts do the math.

By Hilary Levey Friedman | JANUARY 22, 2012

ARAM BOGHOSIAN FOR THE BOSTON GLOBE

ON THE GRID: Five-year-old Krishna Kumarappan attends a class at the Kumon after-school.

A LITTLE BOY, NO OLDER THAN 8, almost leaps out of his chair, screaming, "It's so easy! It's so easy!"

Standing at the front of his classroom, Robert Kaplan, a teacher and cofounder of the Math Circle, one of many after-school math enrichment programs in the Boston area, gently chides him. "No, I don't think it's easy," he says. "And it's not nice to say it is

when we're struggling with the problem."

It's not easy for the parents, either, sitting in the back of classrooms during lessons like this and trying to puzzle out a problem themselves. These are folks who have been through the boom and bust of Baby Einstein and Baby Mozart, and who of course want the best for their children's developing minds. Now they're trying to decide whether extracurricular math centers, which are spreading through the city and suburbs like a cold in a kindergarten, are worth the investment of time and money.

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You can't drive very far in Greater Boston without coming across one of these schools. Within five minutes of my Framingham home there are four different centers: an ALOHA (an acronym for Abacus Learning of Higher Arithmetic), a Chyten, a Kumon, and the MetroWest School of Mathematics (co-owned by the Russian School of Mathematics). Latha Narayanan, manager of the Framingham and Franklin Kumon centers, calls this small area a "math mall," and she's right: Companies with centers in just this corner of the suburbs serve about 1,130 students.

There are at least 14 different programs, with 87 total locations in and around Boston, teaching math enrichment classes to kids (not to mention private tutors, school math clubs, and online instruction). Some of these programs are small – like the Kohlberg Math Learning Center in Harvard Square, which has 12 students, and Girls' Angle, a Cambridge center with anywhere from 10 to 20 at any time, or Kaplan's Math Circle, which operates in classrooms on Harvard's and Northeastern's campuses and has 156 students and a handful of teachers, including Kaplan and his wife, Ellen. Other programs, like the Newton-based Russian School of Mathematics, which has almost 6,000 students, and the New Jersey-based Kumon, which has 6,192 students in the area, are huge. And they have different teaching approaches: Kohlberg uses a physical learning innovation – blocks made to fit together in groups of 10, 100, and 1,000 – to teach kids in a one-on-one setting; Girls' Angle offers individualized teaching without a set curriculum; the Russian School offers classroom-based instruction using a set curriculum; and Kumon has a curriculum but offers one-on-one instruction.

With so many programs, parents may wonder if their children shouldn't be enrolled

just to keep pace with their classmates, to say nothing of getting ahead. How can parents know that these programs work and then choose among them?

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ON ONE HAND, there is little solid evidence to show that these programs do anything at all. Many mathematics education specialists – including Barbara Brizuela of Tufts University and Janice Grow-Maienza of Truman State University in Missouri – say they are skeptical about the efficacy of after-school math centers.

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JUNIOR ACHIEVEMENT: This Kumon class is designed for the very young. The Framingham center's youngest pupil wasn't yet 3 when she began her studies there.

Yet even professors of mathematics education enroll their children in enrichment classes. Jon Star is an associate professor at Harvard's Graduate School of Education who studies how children learn mathematics, and he sent his then 5-year-old daughter and 8-year-old son to The Math Circle for a semester (the family is spending a semester abroad, and the children are not taking after-school math now). While he didn't see a radical change in their performance, he says that it's hard to know what the long-term impact of the instruction will be, because "in math education we don't often ask longitudinal questions." Star adds that there is no easy way for parents to evaluate these programs.

Glenn Ellison is an economics professor at MIT and the father of three girls ages 8 to 17 who have taken classes at four different programs (Girls' Angle, IDEA Math, the Math Circle, and the Russian School). As a coach for middle school math competitions, he doesn't need academic research to convince him that the programs work. Ellison says that those students who have been exposed to algebra early through programs like the Russian School are simply quicker than their peers who have not had extra instruction.

But Ellison believes it's important to gain understanding that goes beyond rote memorization, and some programs instill what he calls "the wonder of math" better

than others. “The Math Circle is very good at teaching kids to think creatively,” he says. “It’s very much anti-Russian School in that it’s teaching things that they are not going to learn in school in the next five years, maybe even ten years.”

Other parents praise rote learning as empowering for their kids. Chris Gabrieli, a former gubernatorial candidate, venture capitalist, and educational policy reform advocate, has five children, all of whom attended classes at the Russian School at various ages from kindergarten through middle school. He recalls stopping into an elementary school-level class one day and being struck by how all the kids were jumping out of their seats and shouting answers. It seemed to him that the “cod liver oil of practicing doing a certain type of problem over and over again was good for you even if you didn’t like it,” he says. “Seeing the enthusiasm and joy and excitement about the problem solving brought home that it’s a lot more than just grinding-it-out practice.”

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OF COURSE, not all of the “cod liver oil” is equally palatable to all kids. Some parents leave repetition-based programs like Kumon and ALOHA because of the daily grind of practice. Brookline full-time mother of three Christina Lavallee let her two elementary school-age sons drop out of Kumon because they hated the repetition and she hated the battles to get them to do the homework.

Then there are the costs. Monthly tuition at the Russian School is $147 to $300. Classes at Chyten, which run between $380 and $740 per month, are the priciest in the area.

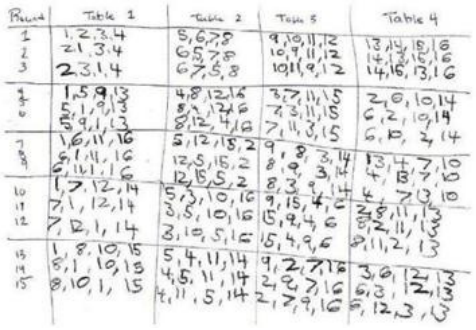
Anne Collins, director of mathematics programs at Lesley University, is rankled by the high rates. “It frustrates me, because so much money is being used on these programs that we don’t have data that shows that they have an impact,” she says. “There is money to be made,

as parents are concerned about their children’s education – and rightfully so.”

Kumon describes itself as the largest after-school math enrichment program in the world. With 253,088 students in centers around the United States paying $95 to $125 per month, a Kumon franchise can be a lucrative investment. Kumon North America CFO Joe Nativo reports that despite the sluggish economy, enrollment continues to surge nationwide. Open locally since 1987, the company has seen brisk growth in the

Boston area: Since January 2000, it has expanded from 24 centers with 952 students to 40 centers with 6,192 students.

While many after-school centers are businesses, some programs have loftier ideals. Girls' Angle, a nonprofit, charges $20 per student per weekly two-hour session. Its president and founder, Ken Fan, says he started the program because "there are girls who benefit from an all-girl math education environment." Some of his students have tried co-ed programs and switched; others chose Girls' Angle from the start. Besides a strong emphasis on creative problem solving, the center has a program that introduces its students to women who use math in their professional lives, "so they can create a concrete idea of what it would be like in that kind of career."



SOLVED! Students at Girls' Angle in Cambridge, where thinking creatively about math is stressed, periodically tackle problems sent in by the public. One such challenge was to develop a seating chart for a 16-player euchre tournament at a senior center in Rochester, New York. The center "had tried to make one and couldn't," says program director Ken Fan. "It's not a trivial problem." The students' first stab was close, though not error-free, says Fan, a math PhD who started the nonprofit after-school program especially for girls. But within three hours the mixed-ages group had cracked it. "They literally came up with the most efficient chart you could come up with," says Fan, clearly proud of the achievement.

Whether it's for help with memorizing multiplication tables or planting the seeds for a career in business or science, parents seem to believe in the power of extracurricular math education. For the 2008-2009 school year, the Newton Public Schools reported that the number of students who participated in math enrichment centers or used private tutors doubled from elementary school to middle school.

This doesn't surprise math teachers. Jayne Bamford Lynch, an instructor at Lesley University, has taught mathematics for 25 years and is a district math coach in the Cambridge school system. Lynch says that all teachers, particularly in elementary schools, offer choices in math instruction to focus on different learning strengths – for example, visual versus hands-on. But by middle school, just as students begin to think more independently, their choices may be limited because of the increased emphasis on standards and testing. This, she says, leads some families to look outside the school systems for math instruction.

And some parents are entering children in extracurricular programs at ever younger ages. Anna Charny of the MetroWest School reports that last academic year, her center went from one kindergarten class per week to two, and that this year there are three large classes – at the school, classes range from five to 16 students, but the average class size is 10 – so she's considering adding a fourth session.

The youngest child I heard about taking enrichment math classes checked in at 2 years and 10 months at the Framingham Kumon. Kumon's Nativo confirms that most of the company's growth is now in the "Junior Kumon" program for kids 3 to 5. Classes focus on basic skills – like learning to count to 200 and to write numbers correctly. According to Star of the Harvard education school, in the past 10 years a research-based preschool math curriculum has been developed and children as young as 3 can indeed learn math. However, he is skeptical about the benefits of having kids do after-school math at that age. "If the math that they are learning in the after-school program is developmentally appropriate," he says, "then perhaps if the student is really struggling in preschool, maybe that helps."

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MORE GENERALLY, what does help? It seems to depend on the child's interests, needs, and learning style.

"One stereotype we have not been able to break in the United States is that 'faster is smarter,' " says Anne Collins of Lesley. "Sometimes it's the person who is more reflective and introspective about thinking through the problem and might take a little longer to get to the answer who illustrates more understanding of the mathematics involved."

Other experts echo the idea that the goal of extracurricular classes should be to generate enthusiasm and love for math, not just improve test scores and speed. Scott Govoni, who has taught math for 14 years in the Andover school system, says that students learn math best when the focus is on exploration and understanding, not just regurgitation and computation. For advanced students, he says, challenging them through enrichment programs can help them retain interest in math and perhaps even become great mathematicians.

It's useful to remember that kids who do find extra instruction helpful don't need to stick with one program for their entire academic career. MetroWest's Charny says she

very occasionally has encouraged students to turn to other programs – for example, Kumon for students who need a lot of repetition to learn. Myrtha Chang, director of the Mathnasium program in Newton, offers another piece practical advice. “A lot of these places do a free trial. You should always take advantage of that,” she says. And above all, Chang says, “there is no one center that works for every child.” In Boston, there are plenty to choose from.

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