Since 2014, we’ve had **13,000 clubs** serving **160,000 kids** – making it the nation’s largest recreational after-school math club.

Crazy 8s is an **over-the-top after-school math club** that gets kids fired up about math. And a new study shows it **reduces kids’ math anxiety**!
A new study by Johns Hopkins University psychologists shows Crazy 8s significantly reduces children's feelings of math anxiety after 8 weeks of participation in the club. The effect was more pronounced among younger kids in the K-2 club. The benefit was seen equally in boys and in girls.
Could taking math outside the classroom help young students with math anxiety?

The findings of a new study from researchers at Johns Hopkins University suggest that may be the case.

The researchers were evaluating the Crazy 8s Club after-school program. It allows children from K-2 and 3-5 to learn more about math through play. The program was developed by the Bedtime Math Foundation, a nonprofit whose mission is to help children learn to love math.
Through a randomized control trial, the researchers found that after participating in the Crazy 8s club for eight weeks students experienced a significant reduction in their math
anxiety as compared to students who participated in an art club for the same amount of time.

The students who took part in Crazy 8s reduced their math anxiety by roughly 50 percent. The students in the art club didn't experience any statistically significant reduction in math anxiety.

"Some kids start kindergarten at age 5 with significant math anxiety," said Lisa Feigenson, the study's principal investigator and a professor of psychological and brain science at Johns Hopkins.

**Impact of Math Anxiety**

Feigenson, who also serves as the co-director of the university's Laboratory for Child Development, says the impact of this anxiety goes far beyond how a young child might perform on a math assessment.

"It's about how hard they're going to try in math," said Feigenson. "It's about are they going to seek out those extra math opportunities, or are they going to turn away from those opportunities and consequently they're probably doing a little worse at math and that effect builds and builds over time."

So what seems to be the value of an after-school club, outside-the-classroom approach to learning math?

"By decoupling it from the classroom, kids might see it as more of a social opportunity to interact with other kids and play math games and solve problems and mysteries rather than just doing paper-and-pencil tests," said Feigenson.

**Methodology**

Initially, researchers used survey data from 755 students across the country who had volunteered to participate in Crazy 8s to examine the program's effect on math anxiety. It found low math anxiety to begin with in the older students and that the program had more of an impact on reducing math anxiety among the youngest students.
Then the researchers decided to use a randomized control trial to counter any possible selection bias in the prior sample and to determine whether or not the reduction in anxiety was simply due to participating in any extracurricular activity.

They used survey data from a different group of 652 students in Maryland and New Jersey. The students were randomly assigned to either Crazy 8s or an after-school art club. To control for demographic differences, each location offered at least one of each club.

Students were surveyed about their math anxiety before starting each club and eight weeks later. The researchers found that the students in Crazy 8s had much lower math anxiety after participating in the club, and this reduction applied at all ages and for both girls and boys. There was no similar reduction for students who participated in the art club.

This study was funded by a grant from the Overdeck Family Foundation.

*Photo: A board game developed by Bedtime Math teaches kids in Crazy 8s about multiples of eight. Photo Courtesy Bedtime Math Foundation*
Toilet Paper, Glow Sticks, and Multiplication: Study Shows How One Free After-School Club Can Help Reduce Math Anxiety

A wait list for math club is not something you often hear about.

But that’s not true for Laura Overdeck. She created an after-school math club called Crazy 8s, a free program that has been used in 5,000 schools and libraries to help elementary school students overcome their anxiety around math and gain confidence. The kits have students
building bar charts out of crayons or geometric structures out of glow sticks.

Now, a new study from Johns Hopkins University shows that young students who participate in Crazy 8s experience less anxiety about math after the eight-week program than they did before.

“We’ve seen more and more that children’s emotional stance toward math affects their ability to perform in math,” said Lisa Feigenson, a Johns Hopkins professor of psychological and brain sciences, who co-authored the study. “If (students) are engaging in (math) just for fun, that has a real potential to change how children approach math.”

The two-part study first surveyed 755 students already participating in the program, where they met for one hour every week for eight weeks. Distributed at the beginning and end of the program, the survey asked students how they felt doing math in front of other people. It also asked non-math questions like how students felt about spelling words, in order to control for varying levels of anxiety.
The results found that the anxiety levels of children in kindergarten through second grade dropped significantly, but the anxiety levels of third- through fifth-graders didn’t change.

But researchers also wanted to figure out how math anxiety might change for students who wouldn’t necessarily have chosen to participate in an after-school math club. So they also conducted a randomized control trial, assigning two groups of students from New Jersey and Maryland into an after-school math club (Crazy 8s) and an art club. They gathered the 652 students’ self-reported anxiety levels before they started their programs and after, and found that both the younger and older students’ anxiety significantly decreased — a trend that held for both boys and girls.

Source: Johns Hopkins University

While the program is not meant to teach students math, Feigenson said its power lies in helping students view math as fun. “Incorporating those lessons in the classroom may be potent,” she said.

Crazy 8s is a four-year-old program run by Bedtime Math, a nonprofit foundation based in Summit, New Jersey. Overdeck, the president and founder, created Bedtime Math in 2012 after parents started asking her to share some of the math problems she would give her children.
before bedtime to help increase their confidence in the subject. But when the same parents demanding an after-school math program, she started developing materials for Crazy 8s.

The program is free, funded by private donations to Bedtime Math and proceeds from Overdeck’s books on math. She estimates that 10,000 schools and libraries have participated since it began four years ago. Overdeck ships these clubs kits filled with materials for 12 to 16 students. The most popular game: the toilet paper Olympics, in which students calculate the length of a strip of toilet paper and then use it as a measuring tool for games like the shot put or long jump. They chart their team’s performance by counting the number of 4-inch toilet paper squares and converting into feet.

It’s telling about the pervasiveness of math anxiety, Overdeck said, that she fields calls from all types of schools, from prestigious private schools like The Dalton School in New York City to rural public schools in Ohio, all asking for Crazy 8s kits. She said she thinks the culture around math anxiety arises from schools’ fast pace through the curriculum, which can leave students behind.

“It’s really heartbreaking,” Overdeck said. “We force everybody through math whether they’re getting it or not.”

Researchers have been looking at math anxiety for at least 60 years, according to a report published in Frontiers in Psychology. It defines the anxiety as a negative reaction toward math that has cascading effects, from tension to disruption of working memory to avoidance of math and math-related careers altogether.

Math anxiety can be passed on to children from teachers and parents who also have a negative attitude toward math, Feigenson said. That’s why Overdeck is hoping Crazy 8s can disrupt this vicious cycle.

“We’re trying to help parents who hate math raise kids who love math,” she said.
The study doesn’t show how the program affects math anxiety long-term, nor was it replicated to see if the effects were consistent, Feigenson said. She added that future analysis should examine how the program serves students across socioeconomic backgrounds.

Overdeck is currently piloting a program in New Jersey elementary schools called Up the Ladder, which take some of the fun components from Crazy 8s and matches them to state standards, so schools can incorporate them into lesson plans.

The study was funded by a grant from the Overdeck Family Foundation, where Overdeck is the chair and her husband, John, is the president. Overdeck also sits on the board of the Johns Hopkins Center for Talented Youth.

*Correction: The number of schools and libraries that operate Crazy 8s math clubs is 5,000.*
Crazy 8s by the Numbers

1: Free kit for each club
2: Age levels to choose from – K-2 and 3-5
4: Different seasons of zany activities
8: Wacky weeks of mischief-making activities per season
12-16: Kids per club – enough to make it fun, but still manageable by a grown-up
32: Fun-filled weeks of activities that appeal to all kids
13,000: Clubs started nationwide, with many running multiple seasons
160,000: Kids having fun with Crazy 8s

It's nothing like your usual math club!
Crazy 8s: How it Works

As part of our nonprofit mission, Bedtime Math created a free kit of materials and instructions that brings math to life.

Each kit is designed for 12-16 kids of all math abilities at two different age levels: K-2 and 3-5. Clubs can take place at schools, libraries and other after-school community programs.

Kids meet on a weekly basis for 8 weeks and engage in high-energy, hands-on activities. With Crazy 8s kids build glow-in-the-dark structures, crack spy codes and play games like Toilet Paper Olympics. Nearly all materials needed are in the free kit, and it’s easy to coach!

It’s time for math to be the cool thing to do after school.
Everyone is Crazy About Crazy 8s!

Crazy 8s is fast becoming America’s favorite math club for elementary kids, with 13,000 clubs serving 160,000 kids. Here’s what some of our coaches say:

★ Students that didn’t like math have decided that math can be fun. They are putting more effort in the classroom work after playing with math in fun ways after school. – Sandra B., Crazy 8s Coach

★ Thank you so much! Your kits are over the moon amazing. I’m so impressed. Kids are clamoring to get into the club! – Gail R., Crazy 8s Coach

★ The students had a BLAST and many students reported that...they started to like math more and to see that it has a purpose in our everyday life! How awesome is that? – Rebekah F., Crazy 8s Coach

Kids can love math. Join the movement and be a part of it!

crazy8s.bedtimemath.org
Bedtime Math’s Crazy 8s club

Season 2
Season 3