WHY MATH CIRCLES?

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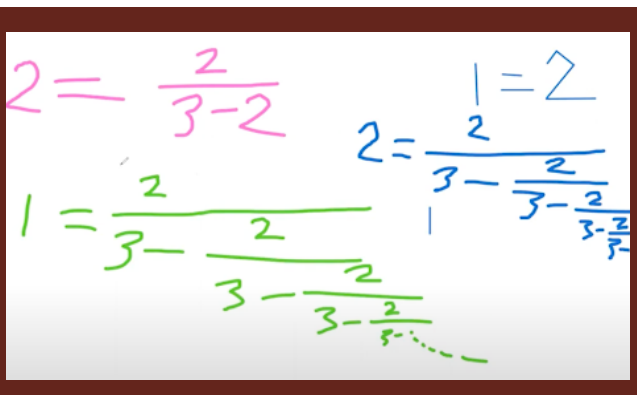
I've been leading math circles for nine years, and in that time I've seen magic happen. I originally began my math circle career as a skeptic: I didn't believe that kids could think deeply enough to develop mathematics on their own, with minimal guidance from a leader. But I have seen it happen over and over again, in hundreds of situations. Not only do math circles help kids develop their passion for mathematics, but the skills that they develop from these circles are the ones that we hope to develop in future generations as a society.

There are many after school enrichment programs out there, and, quite frankly, math circles don't seem necessary. Afterall, math is taught in school; why not save after school activities for activities that they don't do everyday. But the math that is taught in school develops very different skills than those developed in a math circle. Not only do math circles ignite kids' passion for mathematics, but the unique skills they cultivate are essential for personal and academic growth. This article contains some of the benefits from participating in the Global Math Circle program.

"I've noticed what Charley's gotten from The Global Math Circle is great collaboration skills and respect for peers as problem solvers. I've noticed how comfortable he is explaining his thinking, working together with other kids to solve really tough problems, listening to other kids, and working through things together." Anna Carter, parent of a Global Math Circle participant



Participants work together to create rigorous proofs that lead them to develop deep mathematical understanding.

Math circles are rigorous. By rigor I don't mean that we use complicated numbers or that our participants have to tediously calculate decimal and fraction problems by hand. Rather, we take them on a journey deep into the depths of mathematical understanding. Participants in our math circles develop the mathematics themselves, meaning that they have a full and deep understanding of what they are doing.

Math circles develop 21st century skills. Modern mathematics curricula is based on the skills necessary for people to calculate quickly and by hand. Adding and subtracting large numbers, memorizing multiplication facts, and getting the correct answer quickly are considered cornerstones for our elementary mathematics classes. And while these are indeed skills that we value as a community, they are not the most important skills for modern higher-level jobs.

Employers look for good collaborators, patient problem-solvers, and creative thinkers. In fact, Indeed.com's career guide mentions that communication, collaboration and problem-solving skills are in the top 10 skills that employers look for when interviewing candidates.

Math circles create self-reliance. Only participants brand new to math circles ever say, "Is this right?" Those who have experienced previous circles know that they will be met with, "how can we know?" from the leader. One of the wonderful things about math is that it can be proven. No one needs to tell you whether or not you're correct; the mathematics itself can be understood and reveals the truth about how the universe works.

Math circles change our relationship with math. Despite what societal beliefs may have led us to think, the practice of math is a creative, engaging activity that is accessible to everyone. Math anxiety is a *cultural* phenomenon that is perpetuated by adults who also have math anxiety. It has nothing to do with a natural mathematical ability or lack of ability. All math can be discovered and creatively explored by people of all ages and backgrounds.

Because Math Circle questions are approachable, participants don't fear getting started. The mystery pulls them in, and leads to exploration. The slow progression from what's easily accessible to the mystery allows confidence in one's own math ability to develop naturally.

Fundamentally, math circles are how I wish all education would be; collaborative activities, led by wonder and exploration. A space with children have the freedom to explore the concepts deeply and at their own pace, which starts out slow but picks up speed exponentially. In my view, math circles are how we should be responding to the changing educational needs to 21st century learners.

The Global Math Circle's founders, Bob and Ellen Kaplan, continuously repeated, "Math is freedom". And indeed, it is.