

CHARLES & MARGERY BARANCIK FOUNDATION

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**MAXIMIZING
MATH
MENTALITY**

How one school district
reinvented the way elementary
schools teach math



Imagine for a minute you're in third-grade. You're eight years old, and recess just ended.
Now it's time for that dreaded subject—math.

Your feet are dragging and your eyelids are heavy as you wander back into the classroom.
However, as you slide into your seat, a bright display of colors instantly grabs your attention.

Your eyes are fixated on the biggest jar of Skittles you've ever seen in your life standing tall
on your teacher's desk.

Quietly your teacher says,
“It's time for math. **What do you wonder about this jar?**”

WHAT QUESTIONS COME TO YOUR MIND?



Maximizing MATH MENTALITY

In 2014, the Florida Department of Education phased out the Florida Comprehensive Assessment Test (FCAT) and replaced it with the Florida Standards Assessment (FSA). Whereas FCAT and exams like it test for retention of facts, this new test was designed to assess a student's logic and problem-solving ability.

At the time, data showed only 69 percent of Sarasota County third through fifth grade students scored proficient or above on the math portion of the FSA. This was a problem for the A-Rated Sarasota County School District, especially considering these students would have to go on to pass Algebra 1 to graduate high school.

An answer had to be quickly figured out about how to provide innovative math training and resources for teachers that would make elementary students start thinking algebraically earlier in life.

Research shows that many factors contribute to a student's academic performance, including individual characteristics and household experiences. However, studies prove that **teachers matter the most when it comes to school-related factors**. Among student performance on math tests, a teacher is estimated to have two to three times the impact of any other school factor.

To maximize the math mentality in Sarasota County elementary schools, the District needed to train teachers differently than ever before. They turned to a trusted and long-time partner for help.

Charles & Margery Barancik Foundation worked with experts at the District to reinvent the way elementary school teachers could teach math in order to ensure their students continued to be successful throughout their entire academic career. The goal, when it comes to math, was simply to help students change their thinking from "when will I ever use this?" to "I can't wait to learn more!"

OUR FORMULA

Great Teachers x (Research + Training) = Success

Adding IT ALL UP

Barancik Foundation and Sarasota County School District began exploring ways to maximize the impact teachers and the classroom environment had on student math learning. Together they created a pilot Elementary Math Teacher Training Initiative, dubbed Maximizing Math Mentality. The initiative employed full-time math specialists at the county level to embolden teachers with more effective methods to help their students not just find correct exam answers, but understand the underlying math concepts behind them. The initiative had three key components: Teacher Training, Teaching Tools, and Professional Learning Communities.



Reinventing Teacher Training

Math specialists provided innovative and hands-on training for more than 850 elementary school teachers and their principals. Instruction focused less on using text books and more on fun, engaging, creative, and interactive teaching methods at the elementary level.

The majority of Barancik Foundation's funding paid for substitutes so classroom teachers could fully participate in the day-long trainings being offered throughout the year. Giving teachers the ability to commit their full attention to training, free from day-to-day demands of the classroom, was vital to the initiative's success.

Teachers learned ways to bring math to life through creative hands-on scenarios inside the classroom. The key was to spark the natural curiosity of a child as well as open the classroom up for students to engage with one another through peer-to-peer learning.



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Remember the Skittles?

A large jar of Skittles and one simple question accelerate the intellectual curiosity and energy of students. They jump out of their seats to find answers to a not-so-simple question.

Students immediately want to know how many Skittles are in the jar. There is a factor of delayed gratification as the teacher encourages them to work in groups to come up with the question that will lead to a solution.

"How many yellow Skittles are there?" "How many packets were used?" "Can we eat them later?"

As the teacher responds to questions and drops a few more hints, students begin to formulate educated guesses, and they get very, very close to the answer!

Through examples like the Skittle scenario, or how to share Oreo cookies between friends, students learn to calculate the area of geometric shapes, solve word problems, and make connections between different arithmetic operations.

Teaching Tools

Thanks to Gulf Coast Community Foundation and generous Gulf Coast donors, classrooms were equipped with hands-on manipulatives that allow students to use concrete materials to understand difficult concepts.

A crucial online toolkit was also developed so teachers could continue to practice, learn new strategies, and work through any difficulties they encountered.

Professional Learning Communities

A common problem in education is that teachers generally work in isolation. Teachers will attend trainings and meetings together, yet they rarely—if ever—get a chance to go into each other's classrooms to observe, collaborate, and learn from their colleagues. The third key component of the initiative created a new culture of collaboration and peer development through Professional Learning Communities (PLCs).

Much in the same way the first component helped develop peer-to-peer learning models for students, the initiative utilized a similar approach to build teacher capacity, confidence, and collaboration.

After the teacher training, PLCs were established at every school. Each PLC has a teacher who is the "expert" on a different math strategy. In a process called "rounding," PLC members observe each other as they deliver a math lesson. Rounding was facilitated by the math specialists and in the process teachers received peer feedback and worked together to perfect the lesson being reviewed.

The PLCs provide a collaborative and safe environment for teachers to learn from each other as well as build their confidence, creating a self-sustaining way for teachers to pass on their techniques throughout the district and to new teachers.



2018 MAXIMIZING MATH MENTALITY

Learning CURVES

With any new initiative there are obstacles and learning curves. Maximizing Math Mentality employed an independent evaluator to survey teachers, monitor results, and provide suggestions for improvement.



Perception of Professional Development

Change can be difficult in any profession, especially one with as strong a culture as teaching. A concern with the initiative was how the mandatory training would be embraced by principals and teachers. Traditionally, teachers opted into trainings that interested them and were delivered outside of the school day. These trainings had little-to-no follow-up or ongoing support. This passive, unengaging model of professional development was unlikely to impact the district-wide change needed to ensure each and every child understood complex math concepts.

Maximizing Math Mentality was strategic in breaking the stigma of professional development trainings by ramping up in both scale and scope. It is unprecedented for professional development training to be required for every single teacher at all of the 25 elementary schools. The scope seized teachers' attention and built buy-in by allowing them to participate together. This began the change in culture from individual focus to team solidarity.

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The biggest piece of this is the collaboration and the time we're given to put towards planning for the future as a team, because we're all going to teach it differently. Even though we are teaching the same thing, we all have different teaching styles.

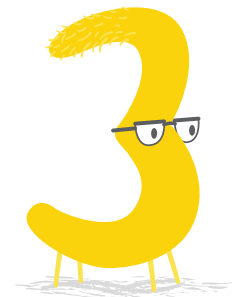
Johnna Poitras, Teacher at Cranberry Elementary School



Allowing Students to Fail

Maximizing Math Mentality flipped the script on the traditional role of educators in the classroom. The new instruction model put students front and center in the classroom. They became the ones asking the questions, rather than the teacher. The technique demands that teachers allow students to struggle and think critically to find an answer. This was a departure from the practice of swooping in to help at any obstacle.

For some this was a hard practice to break. The training gives the teacher the tools to allow the students to productively struggle and arrive at the learning objective on their own—without exacting instruction by the teacher—much like in the real world. Collaboratively, teachers and students create an environment in which mistakes are not viewed as failures, but instead as part of the learning process.



Building Teacher Capacity

A school district's most important asset is its teachers. Investing in their professional development and teaching capacity has a ripple effect.

Through the PLCs, teachers became empowered to act as their school's own math specialists. The peer-to-peer environment creates an opportunity for teachers to learn at the team level and discover that collaborating with their counterparts saves time and improves outcomes. The model created a symbiotic and continuous way for teachers to learn from one another, share institutional knowledge, and help new teachers apply the tried-and-tested innovative math instruction tactics.

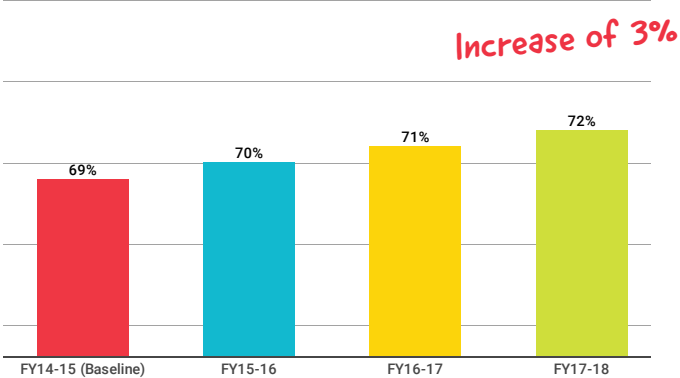
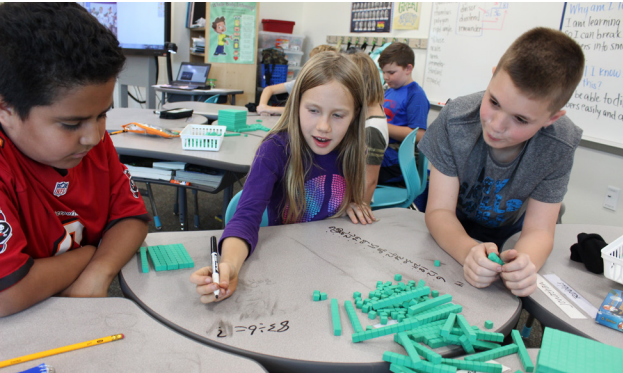
Impact AND RESULTS

Findings from ongoing independent evaluations show students are more actively engaged in math and principals cite growing confidence in their students’ and teachers’ understanding of math curriculum.

Student Test Scores Increase

There was a statistically significant increase in the percentage of students scoring a three or greater (deemed to be proficient) on the Florida Standards math assessment.

Percent of students scoring a 3 or above on the math FSA



Increase in Student Math Curiosity

- Teachers report that students are now actively engaged in math:
- 86% show curiosity and actively participate in classroom discussions.
 - 71% take risks to share ideas, solutions, and strategies just to obtain feedback from peers and the teacher.
 - 75% use learning materials as tools and for representing mathematics.



Rise in Teacher Confidence

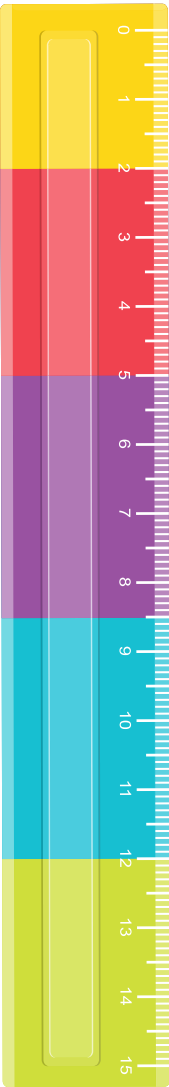
- Teachers responded well to the new training model.
- Teacher confidence in their ability to apply what they learned in the classroom rose from 78% after the first training to 87% after the second training.
 - 94% of PLC participants reported that the collaboration increased their confidence to apply the instructional methods taught in training.



Teacher Expectations and Culture Change

The scale, scope, and support of Maximizing Math Mentality provided a paradigm shift in how teachers expect future professional development opportunities to be created and delivered.

Implementation AND TIMELINE



2014

- Sarasota School District hires elementary school math specialist to design a math training initiative.

2015

- Barancik Foundation invests \$619,144 to hire a second math expert to facilitate trainings and to hire substitutes so teachers can attend full-day trainings.
- Maximizing Math Mentality launches and training to 850 teachers commences.

2016

- 705 first through fifth grade teachers complete the first round of training.
- Professional Learning Communities are formed and "Roundings" begin.
- Teachers complete evaluation survey and results inform improvements to future trainings.

2017

- Barancik Foundation awards an additional \$480,000 to continue trainings and expand to Principals and kindergarten teachers.
- At 25 elementary schools, 859 teachers complete second round of training.
- A team-building expert is hired to support PLCs and an online training toolkit is developed.

2018

- Maximizing Math Mentality changed the professional development culture and transformed the way teachers teach and students learn math.
- Training expands to 6th and 7th grade to further continuity in middle school.

Key TAKEAWAYS

Talent

Teachers excite, inspire, and motivate students to be active learners in different ways. We are fortunate in Sarasota County to have an abundance of very talented teachers who are willing to share their teaching “secrets” with peers. Maximizing Math Mentality doubled-down its investment in talent by training every teacher and supporting ongoing peer-to-peer talent development through the Professional Learning Communities.

Teamwork

Talented teachers love to work together. They understand the benefit and appreciate the opportunity to learn and share. Including principals in the training initiative encouraged teamwork and built trust along with mutual understanding.

Training

Talented people, when given the time and opportunity to work in teams, will embrace training—particularly if led by a gifted presenter. Maximizing Math Mentality trainings were improved after each round. Training has to be interesting, participatory, and fun to be effective. Participants look forward to trainings because they know what they will gain and its impact on their students.

Time

Time is a nonrenewable resource and it’s critical to respect the time these professionals dedicate to their craft. Investing in substitute teachers to ensure participants truly have time to engage at every level of training is important. Give teachers time to: train, plan, participate in rounding and peer-observation, teach, reflect, and repeat.

Moving FORWARD

Maximizing Math Mentality was designed to be a two-year initiative, yet its impact will guide a long-lasting and compounding effect. More than 850 Sarasota County teachers have revolutionized the way math is being taught in elementary schools. The culture will further develop as teachers continue to share, experiment, and grow along with their students.

For the students, the engagement doesn't stop either. The district has expanded the initiative to 6th and 7th grade classrooms, so that students have a more comfortable experience transitioning into middle school and ultimately to their high school graduation year.

This initiative created a new model for professional development that is now the standard for teacher training in Sarasota County. Professional development no longer focuses on an individual teacher who closes their door and instructs in isolation. It involves all teachers through collaboration and peer-to-peer support.

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The debate about whether to use Algebra I as another graduation requirement will likely continue in the political arena. But there should be no debate about the importance of teaching our children the math skills they will need to think analytically and to solve problems they will face throughout their lives. With the help and support of Charles & Margery Barancik Foundation, we are doing just that in our Sarasota County Public Schools.

Dr. Laura Kingsley, Assistant Superintendent Chief Academic Officer,
Sarasota County School District

CHARLES & MARGERY BARANCIK FOUNDATION

**AND IN CASE YOU ARE WONDERING,
THERE WERE **853 SKITTLES** IN THE JAR.**





“Collaboration is always a winning formula. We are grateful to our partners who multiplied the impact of this initiative.” - Teri A Hansen, President | CEO, Charles & Margery Barancik Foundation

Sarasota County School Teachers

Our classroom teachers have our deepest respect and admiration. Simply put, this initiative would not have happened without you. Thank you for the incredible work you do on behalf of our students.

Sarasota County Math Specialists

Your passion for teaching math and ability to inspire others to love the subject as much as you do is at the heart of this initiative. Thank you!

Sarasota County School District Leadership

We value your continued partnership and the innovative strategies you develop to improve outcomes for our teachers, students, and school district.

Gulf Coast Community Foundation

We are also grateful for the philanthropic partnership of Gulf Coast and its generous donors.

