



# IT WORKED!

## *Developing a Common Vision for Mathematics Instruction through STEM*

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With so many changes happening in Arkansas and across the nation in mathematics instruction, I began searching for ideas to better communicate with and support our families who wanted to help their children at home. Our yearly Family Math Night was just not enough. At the same time, teachers were working diligently to transform their instructional practices from being less teacher-directed to a more student-driven approach.

I attended a conference session titled “The Silent E in STEM.” I came away inspired and with a revelation. The engineering design process and the math problem solving process, which we were expecting kids to follow, were almost the same! I knew I had to help both parents and teachers see this connection. I wanted all stakeholders to understand the importance of providing young children with authentic, engaging ways to utilize mathematics. I knew STEM would provide this engagement in an authentic context. I decided I would invite parents to come to the school during the school day to engage in engineering design challenges with their children.

Before the school year started, we solicited the help of math and science specialists. We trained our teachers and engaged them in the engineering design process. We talked to parents about their children’s natural, inquisitive nature and willingness to accept challenge. We explained that, at our school, we were going to provide opportunities for children and families to engage in some engineering design challenges which would highlight the mathematics students are learning in the classroom.

Finally, in September, we hosted our first Pirate STEM Day for second grade students and their families. Parents and grandparents worked side-by-side with their children to design boats, sails, and cannons. Students carried an engineering design log-book where they recorded their designs and revisions as well as the measurement data gathered as they tested their designs. Instructional specialists lead the activities as teachers, parents, and students worked together.

The specialists used this opportunity to communicate the importance of productive struggle and solving problems without first being taught how to solve. They explained that engineers solve problems like this every day and communicated the value of making mistakes, having a growth mindset, evaluating strategies, and continually looking for ways to improve.

The outcome was unbelievable. By the end of the day, students were saying they wanted to be engineers when they grew up. Parents and grandparents began making plans to repeat and extend some of these engineering activities at home. Teachers began to see the correlation between the Cognitively Guided Instruction research and the engineering design process. This enhanced their instruction and they began seeking resources to incorporate STEM in their classrooms. Other grade-level groups began planning similar STEM days. Perhaps the best and most beneficial outcome was the authentic conversations that took place between teachers and parents, parents and specialists, and specialists and teachers. Many questions and concerns were addressed. Relationships were established and it felt as if we had all found a common ground, a common vision.

Today, every grade level at our school is hosting a STEM day similar to our first and other campuses within our district are beginning to host these as well. This initiative took off so fast that I was unable to highlight the math at each grade level to same depth as I did with second grade. As a result, I plan to go back and look for ways to highlight and enhance the mathematics that are important for the other grade levels. We still host our annual Family Math Night in October, but it has now become more of a culminating event where we celebrate our accomplishments and focus on our common vision.

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