

Education Matters

By Ryan G. Van Cleave



STEM T-Shirts created by Mrs. Richardson's 4th grade class

From slowing down the melting of ice to writing original scripts, STEM + Art equals a winning formula for the students at Tatum Ridge Elementary.

As the idea of STEM (Science, Technology, Engineering, and Mathematics) education became popular in American schools over the past decade, it found its way into high school and sometimes middle school curricula. But Tatum Ridge Elementary School isn't content to leave that kind of important, relevant education for the teen years. Beginning with the 2013-2014 school year, they brought STEM education to third, fourth, and fifth graders. "When you look at the job market and the demands of colleges and careers," says Kim Richardson, one of three Tatum STEM + Arts Academy teachers, "it's clear that these skills [STEM] are crucial for success." So why not start focusing on these skills earlier?

After all, while he was sick in bed at age five, Albert Einstein was given a pocket compass by his father. The idea of it always pointing north no matter how he turned it fascinated him. This fascination led him to asking question after question, which soon morphed into a sincere love for science. Richardson adds about the new Tatum Ridge curriculum, "Kids are naturally curious. Let's capitalize on that." Getting kids excited about education early on is also key for keeping the U.S. an economic and technological leader of the global marketplace of the 21st century.

Since this past August, Richardson has been teaching in the STEM + Arts Academy program along with Kimm Hoermann and Joy Myers. They each have their own home room of about twenty students, but then they swap classes multiple times per day so all three teachers get to work with each of the grade levels. Sometimes, the students even work together beyond their own grade level, with the younger students often contributing as much as the older ones within their teams.

One of the recent projects? The fourth graders explored ways to slow the melting of ice cubes. They tried various methods using newspaper, cardboard, waxed paper, and other materials, then compared the rate of melting against a control. Valerie Van Cleave, a fourth grader who participated, learned that "it's pretty hard to slow an ice cube's melting without a fridge and some power. But using a box covered with waxed paper and shredded newspaper didn't do too badly!"

Hoermann, who specializes in science, explains that the kids don't see failure as an option. "Each time

a hypothesis doesn't pan out, the kids get excited about new possibilities. 'How are we going to change it? Redesign it?' they ask." To see them trouble-shooting the problem and collaborating? That's part of the joy of working with students on STEM projects, she says.

Eric Jackson, Tatum Ridge's principal as of 2012, explains that the new program was put in place to help provide activities, experiments, projects, and field experiences that emphasize the importance of STEM subjects in all aspects of the world today. "Each day," he says, "our teachers plan and deliver learning experiences that provide our students with opportunities to conduct research, think critically, and improve their ability to communicate." There's also a strong commitment to interdisciplinary work since the more one learns about any single subject, the more one discovers how connected everything is. A real-world example of this happened via a field trip to Pizza SRQ where fifth generation Sarasota native and owner John Tatum explained in great detail how the seemingly simple operation of a restaurant involves engineering, mathematics, science, and even art. The kids tasted a lot of knowledge (and a bit of pizza, too!).

Another project that moved from the abstract to concrete, real-world outcomes was a beginning of the year competition among all the STEM + Arts Academy students to design a t-shirt that represented what the program was all about. The winning design was put onto t-shirts for all of the students by Royal-Tee's, and the students got a behind-the-scenes look at how screen printing and embroidery is actually done. "It was exciting for the kids to see the journey their design took as it was transformed from their imagination to a real life prototype," explained Mrs. Myers.

Sarasota's Education Foundation believed in the Tatum Ridge STEM + Arts Academy enough to give them a grant this past summer which helped support the first four months of projects, including an exploration of the scientific method, studying fairy tales, discovering how to write original scripts, and learning about engineering through the act of making puppets. "My goat puppet was a marionette," explains Ellie Oar, a fourth grader in Richardson's class. "I used yarn for the hair, a foam ball for the head, fabric for the clothes and horns, and I gave it googly eyes." In December, Ellie and the other STEM students put on a series of original plays using the puppets that they made.

There isn't a standard textbook for this type of engaging new program. A few companies do make prepackaged STEM kits, but those are expensive and they don't take into account local factors that ought to play into the curriculum. For instance, when Hoermann went to an engineering workshop for teachers in Georgia this past summer, she met with teachers from Tennessee who have a K-12 STEM program. Since weather conditions recently made bridges in their area unusable, the curriculum adapted to explore the concept of erosion. Talk about making learning relevant!

The goal is to find what the students are interested in, admits Richardson, then bring those things into the curriculum. It takes a lot of time and even more planning. Plus it's harder to budget for such a variable curriculum, which sometimes necessitates support from the parents. One option that might be a reality for the Tatum Ridge STEM + Arts Academy students in 2014-2015 is the SeaPerch program, sponsored by the U.S. Navy. In this three-day program, students participate in a heist deep-water transfer, a speed-course obstacle course, and a display/panel interview. STEM programs are important to the future of the Navy said Lt. Cmdr. Jaye Jones, a Navy city outreach officer for Navy Recruiting Command. "These participants are the future of the Navy," Jones emphasizes. "We are making sure we protect that future. Today's Navy demands greater high-tech skills and men and women with strong math and science backgrounds. Through the Navy city outreach program and these types of collaborative efforts, we build stronger STEM foundations for tomorrow."

Principal Jackson adds, "It is critically important that all schools provide our students with the knowledge and skills needed to function in a technological society. At the elementary school level, technology serves as a key educational tool for research, development, and presentation of student work. It complements great teaching through extending students' experiences beyond the classroom." But it all starts with great teaching from dedicated teachers. And Tatum Ridge is lucky to have that part of the equation covered. In spades. ■



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