Eighth grade student Kennedy Edward dusts for fingerprints as he works on the Forensic Science Module in Concepts of Engineering.

GCCISD Adds STEM Labs on Junior School Campuses

With science, technology, engineering and math (STEM) a focus in education all over the nation, Goose Creek CISD has added STEM Labs on all five junior school campuses. The STEM Labs were a result of the 2013 Bond, and they will be completed under budget.

"The original amount budgeted for the STEM Labs was $2,000,803, but the estimated cost, now that all the labs are nearing completion, is $451,879.09, which puts us under the budgeted amount for this Bond project," said Anthony Price, deputy superintendent.

The addition of the STEM Labs gave 7th and 8th grade students the opportunity to select the one-semester or full-year elective course Career Portals: Introduction to Engineering. This introduces students to STEM connections in a variety of career clusters. Eighth grade students also had the option of choosing Concepts of Engineering, which allows them to earn high school credit for the course.

Each lab houses 14 computers, which are different stations. There are 28 modules and seven sessions in each module with each session requiring approximately one class day. In the course of seven class days, there are 196 options for hands-on lessons. By pairing up, 28 students rotate through the modules to get an introduction to different aspects of STEM.

Perhaps the greatest challenge for teachers in preparing for classes in the STEM Labs is organizing the materials, ensuring that everything for various sessions is marked and stays together, since there is a large amount of

Jordan Muschweck (left) and Shelby Torres work together to construct a vehicle during a session in the STEM Lab at Baytown Junior School.

"This is my passion," said Sivek. "More than ever, our kids need hands-on instruction. STEM is exactly what Goose Creek needs. We live in the energy corridor of the nation, the medical center of the world, and we're down the road from NASA. What better place to have a STEM program than Baytown, Texas."

Along with the junior school courses, Goose Creek CISD also has a districtwide STEM Program of Studies, including the STEM Academy at Robert E. Lee High School, launched last year. The school was notified in July

equipment. Finding enough storage space is another challenge. Teachers are certified in Career and Technical Education and have attended training to learn how to use the software. They serve as facilitators and aren't expected to be experts on every topic. Lessons are student-centered and student-driven, but when questions arise, students turn on a light at their station to signal the teacher. Teachers Lori Sivek at Gentry Junior, Cassie Moon at Baytown Junior, Rolando Serna and Joanne Bell at Cedar Bayou Junior, Mercedes Paul at Highlands Junior and Tom Hinds at Horace Mann Junior are the facilitators in the STEM Labs and are getting off to a good start.

At Baytown Junior, Moon said her STEM classes often seemed like "organized chaos," but Concepts of Engineering appeared to be running like a well-oiled machine. At all 14 stations, students were engaged in creating and solving problems, collaborating with their partners. Eighth grader Kennedy Edward, wearing a white lab coat, dusted for fingerprints while working with a session in the Forensic Science Module.

"I like getting my hands on deck and learning to do new things," said Edward. "It's not every day you get to do that in a class, and I'm appreciative of that."

Shelby Torres and Jordan Muschweck, both 8th graders, worked intently on constructing a vehicle, while Fabian Ramirez and Joshua Kendrick worked on a session in the Plastics and Polymers Module. Eighth graders Yazmin Dominguez and Michelle Ortega were following instructions on the computer to build a soapbox racer.

"It's fun, and we're learning," said Dominguez. "It's challenging to figure out things and to decide what to do."

The STEM Lab at Gentry Junior has just been completed due to other construction projects on the campus during the summer, and students are anxious to begin the modules. Sivek, who once taught at Travis Elementary and Cedar Bayou Junior, returned to Baytown in 2012 after 20 years of living in Florida and serving as a teacher for Brevard Public Schools along with working in the summer at the Kennedy Space Center. Schools in that area had strong science programs, and there was an emphasis on STEM, so Sivek wanted her students here to have the same opportunities. When offered the position in the Gentry STEM Lab, she quickly dropped her plans to take an administrative position at a private school and jumped into the STEM program feet first. She is almost finished unpacking materials and organizing the lab, and her excitement about starting her students on their first modules shows.

that it had earned the T-STEM designation from the Texas Education Agency (TEA), along with 18 other new Texas STEM Academies, for the 2015-2016 school year. After submitting a lengthy application to inform TEA about activities, curriculum and oversight, and creating a blueprint that covered TEA expectations, Greg Lynd, principal, was elated to find out that the academy had earned the designation. A coach, provided by TEA, will help them with building the program, improving curriculum, and graduating students from the academy.

The Project Lead the Way Engineering Pathway began at REL, RSS and GCM during the 2014-2015 school year with Introduction to Engineering Design and continuing with either Principles of Engineering or Computer Integrated Manufacturing this year. Project Lead the Way is a highly rigorous curriculum that will prepare students for engineering-related post-secondary education.

Robotics classes began at REL this year with three completely-filled sections after the success of FRC 1255 Blarglefish, the high school robotics team, coached by Keith Cummings and Misty Coyle-Jacobs. After competing in several qualifying rounds, the team's alliance, comprised of four robotics teams from across the world, advanced to the finals of the tournament. Of the eight alliances advancing to the finals of the FRC World Championship Tournament, the alliance which included Goose Creek CISD's Blarglefish team finished in seventh place. The robot's capabilities were demonstrated at the Administration Building for the community prior to a meeting of the Board of Trustees and at the Back-To-School Convocations for Goose Creek CISD employees.

STEM is growing in Goose Creek CISD, and the numbers prove it.

"Five years ago, 92 students were enrolled in one of two STEM courses the district offered," said Renea Dillon, director of Career and Technical Education. "This year, we have over 1200 students in eight STEM courses. This includes 375 8th graders in Concepts of Engineering for high school credit."

Along with the new programs and courses, strong partnerships with local business and industry also are helping to prepare Goose Creek CISD students for STEM-related post-secondary education and careers. If you would like to be more involved with these programs, call Renea Dillon at 281-420-4550.

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