

Projects put wheels of tech learning into motion

Written by Laura Stetser Wednesday, April 17, 2013 02:31 pm



A series on how Egg Harbor Township Schools and community groups are educating students in science, technology, engineering and math, collectively known as STEM.

EGG HARBOR TOWNSHIP – Could 9-year-old Mikki Pomatto be one of our county’s new top engineers? Will 17-year-old Egg Harbor Township High School student Wanda Quintanilla end up in a position to be a key problem solver?

While the future for these two students is not yet known, they are gathering the knowledge and the know-how from within their classrooms to prepare them to enter the growing fields of science, technology, engineering and mathematics – known as STEM – if they should chose such careers.



The need to support and foster STEM education in order to encourage the country’s next generation of scientists is recognized at nearly every level of government. From the U.S. Department of Defense to the U.S. Department of Energy, there are programs encouraging the instruction of STEM, a focus that aims to prepare the country for an ever-increasing number of STEM-related job opportunities.

According to New Jersey’s Federal Research and Development and STEM Jobs Report 2013, New Jersey alone will need to fill approximately 269,000 STEM-related jobs by 2018.

The report states that “New Jersey kids and parents need to know about the potential for rewarding – and high-paying careers in STEM. STEM professions and occupations are among the highest-paying jobs. They are also the basis for a successful, globally competitive and innovative New Jersey and U.S. economy. During the next decade, overall U.S. demand for scientists and engineers is expected to increase at four times the rate for all other occupations.”

The matter is one of global competition, and there is additional attention being paid to how schools educate and encourage girls to take part.

The Office of Science and Technology Policy, in collaboration with the [White House Council on Women and Girls](#), state that “supporting women STEM students and researchers is not only an essential part of America’s strategy to out-innovate, out-educate, and out-build the rest of the world; it is also important to women themselves. Increasing opportunities for women in these fields is an important step toward realizing greater economic success and equality for women across the board.”

As if taking that pledge to heart, female students like Pomatto and Quintanilla in classrooms across Egg Harbor Township are getting right down to work on these goals by simply being curious students.

Mousetrap racers

Pomatto was recently named the winner of a mousetrap racer design competition in Dr. Joyanne D. Miller School teacher Kelly Hunt’s gifted and talented class, and she stood confidently with her design, marked with a statement that read, “I break for nothing.”

“I beat the school record of 102 feet, 9 inches,” she said after her win in late February.

Pomatto’s vehicle, larger than many of the others her classmates crafted, was designed with two vinyl records as the rear wheels, a long, hollowed-out wood frame body that was decorated in zebra duct tape for style and a pair of CDs as the front wheels. She connected a long rod connected to the mousetrap.

“The longer the rotation, the farther it will go,” she explained on her use of records for wheels. She also stated that the longer rod allowed for a more explosive release of the mousetrap.

According to the White House, female role models in STEM careers are an essential element to gaining a larger pool of interested girls, and it seems Pomatto is also on track with this aspect as well.

“I saw my sister get second place last year and I saw my cousin do it, too. I broke both the family and the school record,” she said proudly.

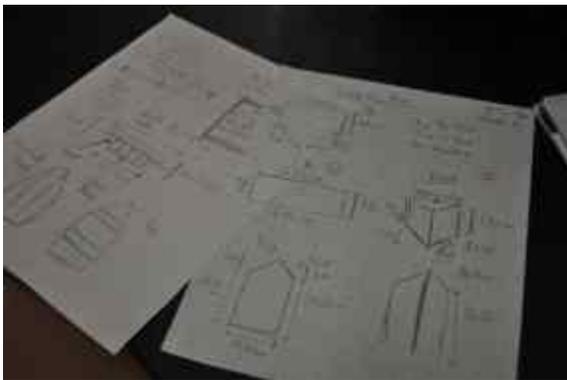
Hunt’s classes are presented with the challenge each year and go through a process of research, design and redesign before their final test. However this year, the students gained an unexpected challenger.

Warren “Skipp” Fipp, the director of the district’s transportation department, said his mechanics had been interested in hosting their own competition in the shop and when he heard about the Miller School challenge, he asked if he could take part as a representative of the department. He brought a mousetrap racer that featured a school bus cardboard frame.

“As an adult I was all caught up in this competition to create a car that would go far when propelled by a mouse trap,” he said. “Can you imagine the skills related to science and technology and engineering that the students have been engaged in as they worked on this project? Years back the concepts of simple machines and of energy transference were subjects left to high school, but not at the Joy Miller School. These are concepts and lessons learned day in and day out. In the end, I have to say loud and clear, ‘I am not smarter than a fourth grader from the Joy Miller School’.”

Fipp said credit should be given to the staff offering these constructive learning opportunities. He also offered praise of Principal Marjorie Fopeano and Hunt “for being such forward thinkers and for preparing their students for the 21st century for college and for the world of work.”

Boats that float



During a recent visit to her honors physics class taught by teacher Michelle Fitzgerald, Quintanilla was working hunched over the lab table next to her partner, senior Billy Clark, 18. They were finishing a scale cardboard boat that would be tested and used as the model for a full-scale boat they would build later in the school year.

“You have to have air pockets on the bottom so that it’s lighter. You can’t have a flat-bottomed boat or it won’t work,” she said. “We calculated our weight and did some conversions to make it on a smaller scale.”

After they finished making the scale model, they were to place weights into their scale model and test their design. After that test, they and their classmates will be working on constructing a real version that would carry their actual weight and hold up in a test in the school’s swimming pool later this year.

Throughout the halls

Just down the hall on the same day, male and female students in teacher Franklin Williams III classroom were working together to test their boats. Teamwork is another important component of STEM education.

A student-built boat called the Titanic 2 was put to the test and held up for the designated time frame.

“I don’t think the Titanic is going down today,” Williams joked with his students as the final seconds of test concluded.

Similar STEM lessons are being implemented at all levels in the district in some manner, including at Slaybaugh Complex, where a few weeks ago third-grade students in Donna Efstatos' class were incorporating a similar vehicle design challenge to find out how far the moon is from Earth as the final project in their unit on space.

The students in her classroom constructed their "moon vehicles" from household items like bottle caps, ribbon and toilet paper rolls and got to test them in a thrilling contest one day in February.

For their designs, the students had to account for friction from the Earth's atmosphere and meteors and comets that may come into their path, which were represented on the scale model by fabric and rocks laid along the route.

The floor of the classroom was laid out like a scale model depicting the distance to the moon, with every four tiles representing 15,000 miles of space. The children excitedly counted down before each "blast-off" and the student designer would launch his or her vehicles into the air.

Once the vehicles landed at their final destination, a student did the math to calculate how many tiles and therefore how many miles that vehicle travelled.

Engineering, science, technology and math were all at work as the students laughed and worked together in what very much resembled structured play.

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