

# TULARE COUNTY OFFICE OF EDUCATION

## Community partners join, create STEM program

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By: Robert Herman

The conversation between members of an Earlimart Middle School after school STEM program was a snapshot of quality 21st century learning. The team of students had gathered on the dusty baseball field with their facilitator to assemble and test a trebuchet, a type of catapult they had designed and constructed. All the elements of learning were there: collaboration, critical thinking, communication and creativity. "I think the weight is too low," Manuel theorized as the team fitted the launching arm with a sling designed to propel a 10-pound exercise ball through the air. For nearly two hours the team worked together, testing and modifying the trebuchet. "We need a lighter ball, maybe a basketball," said Andrick. Modifications and further testing continued into the early evening. Through the process, the students remained optimistic. "The ball will probably hit the score board," they joked, looking at the object that sat across the field some 40 yards away.



There on the baseball field and during the design and construction process weeks before, students learned engineering the empirical way – the process of engineering through observation and experience. To the students, the success of their efforts would have been to see their ball rocketing across the baseball field. While that didn't happen, they were successful in engaging in the engineering process and thinking about their decisions. "In many ways, the process was the point of the program," said Virginia Sepeda, Region 7 Expanded Learning Program project coordinator. "We were successful in getting middle school students to think critically, creatively and collaboratively."

The Earlimart after school STEM program was developed through a partnership between Self-Help Enterprises, the Tulare County Office of Education Region 7 Expanded Learning Programs and CHOICES After School Program, the Earlimart School District and ImagineU Children's Museum. "Our vision was to broaden the community's access to expanded learning opportunities by leveraging local resources to their maximum," said Ms. Sepeda. "We also work to ensure our programs are aligned to the *Twelve Quality Standards for Expanded Learning in California*. The Earlimart STEM project supported six of these standards."

The partnership began as a well-received pilot in spring of 2017 for 30 middle school students who explored simple robotics. In May 2017, through a generous grant from Tulare County Board of Supervisors' Step Up Youth Activities Grant, the pilot evolved into a three-part, year-round course, with each session lasting six weeks.

The first of three sessions kicked off in July, which filled a gap between Earlimart's summer learning programs and the first day of school in August. Summer content included learning about simple machines and motors, while

building and programming robotic mice. “It was important to the partners to harness community resources over the course of the summer so that students had access to an expanded learning opportunity,” said Ms. Sepeda.



This fall, students began the second phase of the program – the design and construction of the trebuchet. Guided by Enrique Ramirez, a senior docent at ImagineU Children’s Museum, the students worked in the community room of the Washington Plaza Apartments, a Self-Help multifamily development in Earlimart. Students began with research and sketches of the machine, followed by construction using simple tools. Mr. Ramirez explained that he didn’t give the students ideas on constructing the trebuchet. “They are learning as they go,” he said.

Kari Ludvickson, residential services coordinator for Self-Help Enterprises, said, “This program is important to us because we believe in providing access to quality STEM opportunities in the rural communities we serve.” In total, Self-Help Enterprises has 28 multifamily housing developments with community centers in eight Central California counties – developments Ms. Sepeda and Ms. Ludvickson see as potential sites for other community after school program opportunities.

While students failed to launch a ball with their trebuchet, they weren’t too disappointed. Ms. Ludvickson was quick to offer the possibility of extending the program by a couple days if the students would continue their design research. The third session of the Earlimart STEM partnership is scheduled for February 2018 – an event sure to offer students more real-world learning and, hopefully, create ideas for careers of their own.

*Photos above:*

- ~ Earlimart Middle School students are participating in a STEM after school program that began this summer and continues into the spring. This fall, the students designed and constructed a trebuchet, a type of catapult.*
- ~ Students Andrick and Edwin (l-r) work on the construction of their trebuchet as part of an after school STEM program in Earlimart. The program was a partnership between Self-Help Enterprises, the Earlimart School District, ImagineU Children’s Museum and the Tulare County Office of Education.*
- ~ Once complete, the team attempts to apply the engineering lessons they learned to launch a basketball.*