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Early STEM Program Still Going Strong

Program tests commitment of instructors as it helps at-risk students excel at math and science.

By [Jason Koebler](#) | Sept. 28, 2011, at 4:21 p.m.



With the onset of the great recession and a skyrocketing unemployment rate, improving science, technology, engineering, and math (STEM) achievement has everyone's attention. But it's not a new problem, according to Reagan Flowers, the founder of one of the country's first STEM programs.

For nearly 10 years, her organization, C-STEM (the C stands for communication) has been helping engage at-risk students in math, science, and English—long before many corporations began donating money to organizations like hers.



"Being an early innovator, a front-runner—we haven't benefited so much in terms of the funding," Flowers says. "When I started there was no research, I couldn't find anything to back up my thinking. I almost doubted it in a sense."

It all started in 2002 at West Briar Middle School in Houston, where Reagan was a teacher. She took a team of middle schoolers to a FIRST robotics competition and quickly found it to be a humbling experience.

"I saw quickly that we were really behind in terms of our experience and ability," she says. "We were behind in every facet. We were not competitive. We were the only minorities at the competition."

Instead of giving up, Reagan decided to take action. She started teaching her kids using real-world examples—the so-called "project-based learning" that gets many in the STEM world excited today. Although her students lacked math and science skills, she also realized that many were behind in language arts as well. "If you can't read and write," she says, "you can't do math and science."

She continued to teach her students math and science, but also gave them a goal—her students were to build robots. In 2003, her class returned to the FIRST competition and fared much better. The class won the Rookie-All Star award at the competition.

The next year, she began operating her program at three additional schools.

"Being an older organization gives us an advantage in terms of continuing to develop an effective STEM program that's bringing about change," she says. "We're seeing what works and what doesn't work—how does an effective program look? What does it need in terms of support and resources?"

The days where C-STEM worked with volunteers to train new teachers are over. The corporations eventually took notice. Sponsors such as Shell Oil, Dow Chemical, AT&T, and State Farm Insurance help C-STEM operate in 13 school districts in six states. C-STEM recently started its first international program, in the Dominican Republic.

Its results have been impressive: Since 2002, C-STEM has trained more than 500 teachers in project-based learning who have reached more than 50,000 students, 91 percent of whom are black or Hispanic, groups who consistently have lower scores in STEM subjects than white students. About half of C-STEM students who have graduated high school have gone on to study a STEM-related subject in college, and 100 percent of C-STEM students have passed their state's math and science standardized tests.

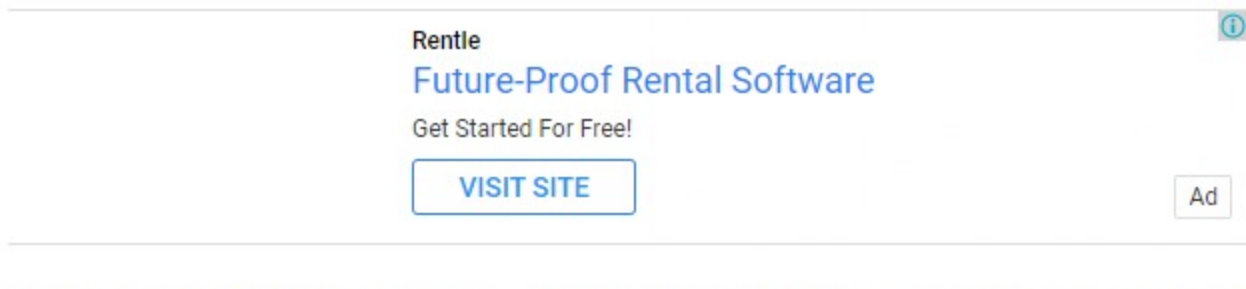
Those students may owe something to Reagan's strict guidelines for program admission. She says many schools are reluctant or not allowed to implement new programs in the classroom.

"They save [hands-on programs] for after school or summer," she says. "I go into classrooms and I'm bored out of my mind. Imagine how a kid feels."

C-STEM invests \$10,000 in each school operating in the program—the schools pay just \$239 per teacher trained, with a minimum of six teachers per building. Principals and teachers at participating schools sign a contract with C-STEM promising that they will use the curriculum in their classes.

"It's not enough to just train the teachers. If you go to work and no one knows about [the training], no one is holding you accountable to do it," she says. Each teacher goes through 24 hours of intensive training, receives C-STEM instructional material to help their students with in-school projects, and ongoing training throughout the year.

Reagan says she wants to see a return on her investment. That's why she requires at least six teachers at each school be trained and that the principal is on board. Many schools, she says, are content to keep exciting programs out of the classroom.



It all culminates in the C-STEM challenge—where students from each school compete against each other to solve practical math, engineering, and computing problems.

It's not just the kids that feel the heat of the competition—Reagan says the challenge was designed to make sure teachers were sticking to the curriculum.

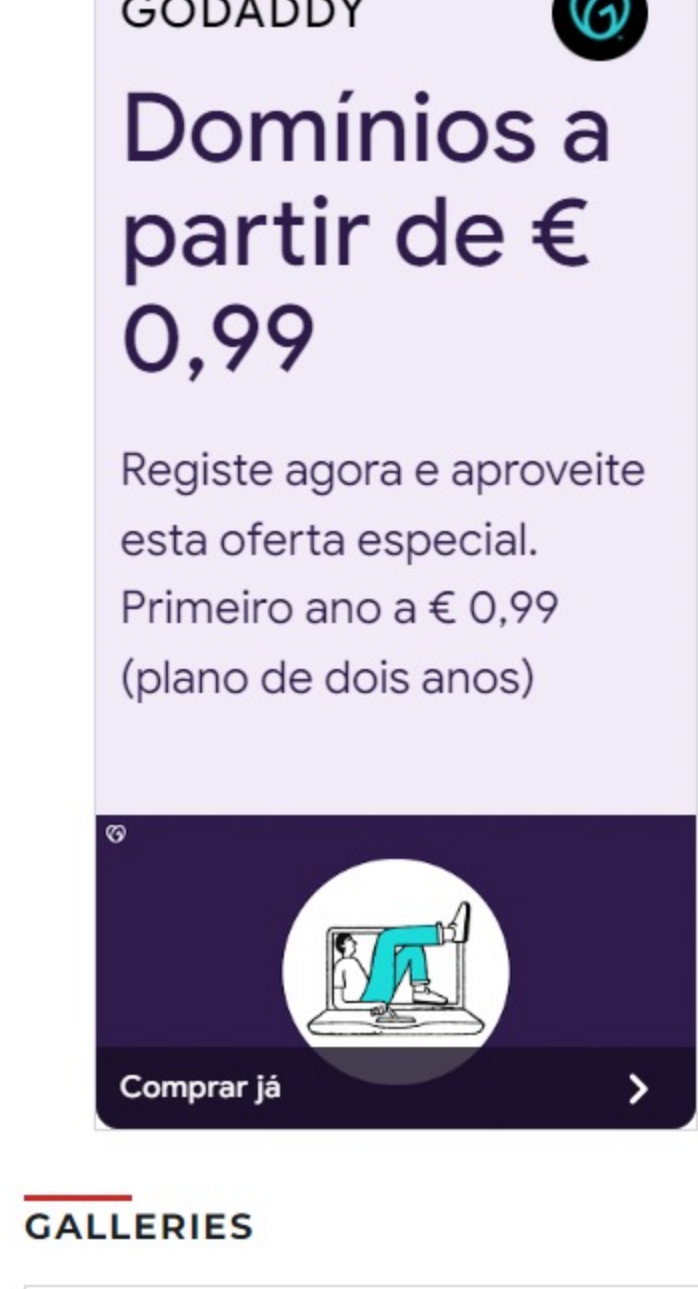
"The kids love to compete. But for us as an organization, that's our accountability piece," she says. "The teachers are competing alongside their students, so there's added pressure."

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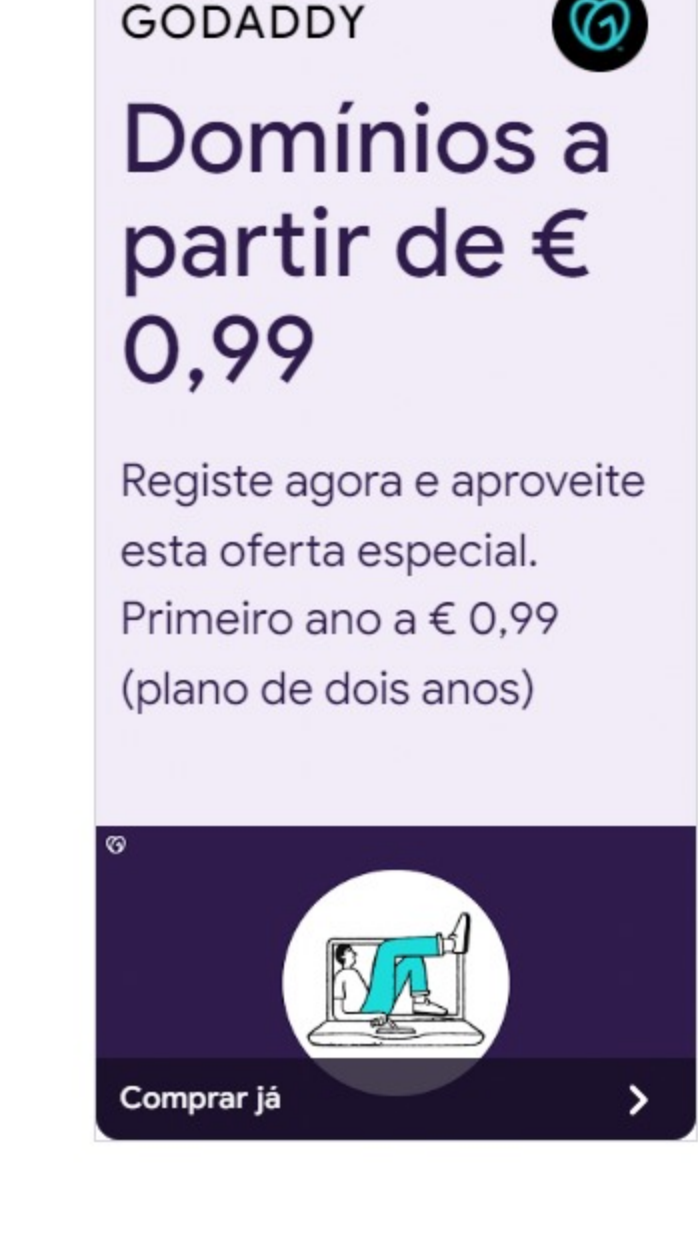


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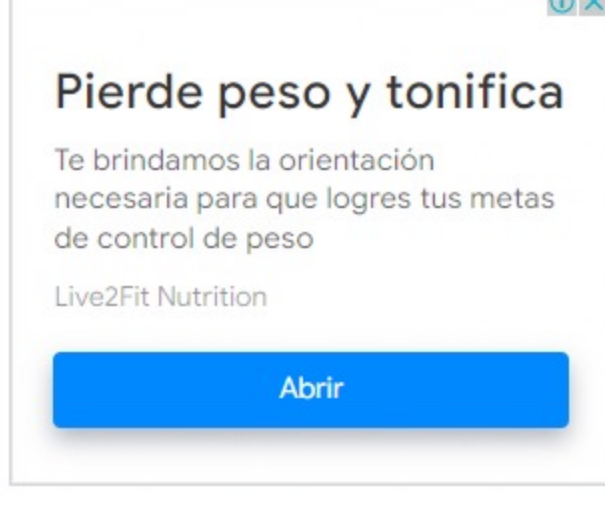
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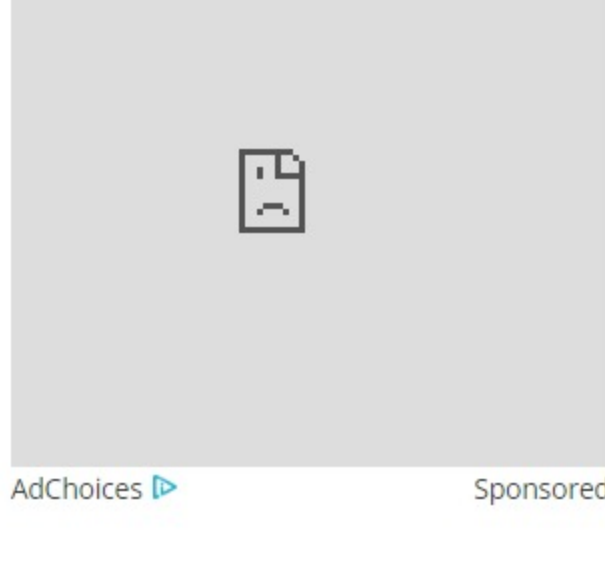
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