

SPARKING GIRLS' INTEREST IN STEM

Two districts are leading the charge to ensure a bright future for girls in STEM careers



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Author

Cindy Moss Senior Director of Global STEM Initiatives Discovery Education What did you want to be when you grew up?

At the end of the last century, you wouldn't have been able to even name some of the top jobs of today: user experience developer, driverless car engineer, mobile app designer. Maybe that isn't even the right question anymore, and instead we should be asking kids, what kinds of problems do you want to solve? Imagine being able to engineer better medicines, enhance virtual reality, secure cyberspace, or ensure access to clean water.

In the words of Marian Wright Edelman of the Children's Defense Fund, "You can't be what you can't see." Unfortunately, girls may have a harder time envisioning a wide-open future than boys do. They have traditionally been steered away from STEM due to stereotypes that girls naturally excel at social skills-collaboration, communication, problem-solving, and the ability to take multiple perspectives. Our understanding is evolving, though: Not only are these skills and abilities not gender-specific, they are assets for any individual in the STEM disciplines. Employers know this. For their own futures and for generations to come, it's our responsibility to provide engaging and meaningful STEM programs to continue to show girls what they can be. I have had the opportunity to see STEM programs in action around the globe and have been particularly inspired by some of the programs dedicated to engaging girls in STEM projects and maintaining their interest in the key disciplines. From Dubai to Finland to Egypt and back home to the United States, I've met educators who are working with each other and their students to ensure a bright future for girls and the societies they will serve in the coming decades.

Two educators leading the charge in the United States have had significant success. **Dr. Tina Plummer**, assistant superintendent for curriculum, assessment, and professional development in the Mehlville School District in St. Louis, MO, and **Dr. Candy Singh**, superintendent of the Fallbrook Union Elementary School District in Fallbrook, CA, are both innovators who find themselves, literally, at the table with students, mentors, and educators.

Discovery Education works regularly with these partners, but we took some time to focus on their initiatives to spark girls' interest in the STEM fields. Hopefully, pieces of our conversations will spark your own ideas for continuing to innovate in this critical area.



STEM Integration and Breakfast with the Experts in Mehlville

Global and local challenges surround us. To address these challenges and move forward, we need people who know problem-solving strategies, think critically and creatively, communicate and collaborate with others, and persevere when something does not work the first time.



"Start young and give them opportunity."

Dr. Tina Plummer Assistant Superintendent for Curriculum, Assessment and Professional Development Mehlville School District, St. Louis, MO Dr. Tina Plummer was not surprised when fewer girls than boys signed up for STEM classes during the 2014–2015 school year. It was the school district's first year offering such a program, which at the time included courses about engineering and has since added more options. Dr. Plummer knew that girls have been historically underrepresented in STEM fields, sometimes due to self-selection based on a complex matrix of factors.

Mehlville School District has made it a priority to make sure girls in the district know about STEM classes and opportunities, so they took a focused approach to increasing the number of girls participating in the program. But it was an elective, and Dr. Plummer wanted to keep it that way. She has doubled the number of girls enrolling in just three years with two main tools: information and food.

Mehlville began hosting Breakfast with the Experts, just for girls, to introduce them to STEM course content. Before students sign up for classes, every middle school hosts a breakfast designed to showcase STEM topics and allow girls to interact with women who are succeeding in a variety of STEM fields. Students have an opportunity to meet and eat with engineers, neurobiologists, and computer programmers. Featured guests come from nearby Washington University's Association for Women in Science and include university staff and undergraduate and graduate students.

Once girls' interests were piqued by Breakfast with the Experts, Plummer had

to ensure that the courses were engaging and that her staff was prepared. They've been noodling with the schedule and have added two new courses on the computer science path, giving students more voice and choice. And they've implemented a STEM Innovator program with Discovery Education, where staff participate in professional development and ongoing coaching, all focused on STEM education and career opportunities.

The results? Plummer can point to many projects and perspectives. At a recent STEM Advisory Board meeting in the district, STEM Innovators shared their lightbulb moments from the year. Asked about a memorable student project, Plummer quickly pointed to an assignment in which students had to create a functioning body part (e.g., a heart that pumps, an elbow that bends) and the realization that creating a functioning ligament might be the most important challenge in the modeling of an elbow.

Funding and resources for these programs weren't an issue in Mehlville due to a levy passed several years ago that included funding dedicated to professional development and strategic plans focusing on middle school STEM programs, but Plummer does have some advice for educators working to make a difference with fewer resources.

"Start young and give them opportunity," she said. "Get them connected to role models. Make those connections within the community. Create a STEM Advisory Board and get feedback. Do readings and watch videos on STEM topics, and find ways to change classroom instruction."

CyberPatriot Girls and Girls and STEM Inspiration Breakfast in Fallbrook

Fallbrook has taken a districtwide approach to our STEM commitment. We have innovation labs and instructional coaches in all schools. All teachers are being supported in implementation of NGSS and have the opportunity for job-embedded professional development in every classroom. STEM is not an add-on; it's not a robotics class. —Dr. Candy Singh



"STEM is not an add-on; it's not a robotics class."

Dr. Candy Singh Superintendent Fallbrook Union Elementary School District, Fallbrook, CA Dr. Candy Singh recognizes that personal and cultural biases may influence people to inadvertently steer girls away from the STEM fields. To change the trend at a foundational level, she has lead her district in ensuring that every classroom, every teacher, and every student has equal access to great STEM opportunities. Fallbrook has met this commitment with a variety of programs, from a national cyberchallenge to mentoring to professional development.

CyberPatriot Girls is a national youth cyberdefense competition that casts students as IT professionals tasked with addressing cybersecurity risks in model companies. Participants work in teams and develop coding and cyberprotection skills as they compete. The program is available to all middle school girls in Fallbrook, but the district also makes an effort to seek out and encourage girls who may not express an initial interest.

Like Mehlville, Fallbrook also hosts a yearly Girls and STEM Inspiration Breakfast. They bring girls in Grades 4 through 8 to an event at the local state university for a morning of connection and inspiration. For these breakfasts, Fallbrook educators identify girls who display an aptitude in the STEM areas but may not traditionally be represented in STEM courses. Attendees enjoy a keynote speech, meetings with role models from STEM fields, and a campus tour. Since many of these students may be the first in their families to attend college, this program gives them the opportunity to develop a vision of college for themselves.

Finally, it isn't surprising that Fallbrook has also dedicated time and funding to professional development, and they have based their professional development decisions on research about the most effective approaches. Since Dr. Singh arrived in 2011, one of their most effective decisions has been to have one site-based instructional coach in every school. It's a manifestation of the foundational belief in Fallbrook that every student should have access to rigorous STEM opportunities, and that starts with their educators.

Dr. Singh would like to encourage people to think more broadly about initiatives related to STEM. She'd like people to move away from the notion of one pioneering feature of curriculum or the acceptance of pockets of excellence based on the luck of the draw – the teacher you get or the club your friends pick. She wants people to wonder how to bring these experiences to the most students within their schools and then make sure girls are included and encouraged to take advantage of all opportunities.

In every district, school, and classroom, young people need visionary educators to help them see the possibilities of their futures. Girls, especially, need our attention if they are to maintain their natural curiosity and enthusiasm for science, technology, engineering, and math.

Maybe we won't be able to predict the exact jobs that will open up in the next 10 to 20 years, but we can help spark girls' interest and support their work as they develop the cutting-edge STEM skills that will prepare them for anything the future may bring.

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Discovery Education STEM Connect is an interdisciplinary K-8 resource that enhances core curriculum. It guides students to develop and apply knowledge and skills to important real-world challenges as it helps them to build real possibilities for their future.

Explore more at DiscoveryEducation.com/STEMConnect

