

Classroom Perspective: Teachers Speak Out About STEM

BY CYNTHIA D. MILLER

The quest to attract students to study science, technology, mathematics and engineering disciplines in college is getting a lot of publicity and focus from the government, education systems and businesses. However, when it's just the teacher standing in front of a group of students, how then does the grand scheme of things play out?

Three STEM teachers in different education systems answered that question. One is a professor at a private college, one a teacher at a suburban middle school, and the last a special education teacher at an inner city school. Though their settings are markedly different, their desires, passions and challenges are strikingly similar.

"It's just when you're about to give up, that's when it works," says Jennifer Staiger, assistant professor of chemistry and director of the honors program at Mount St. Mary's University in Emmitsburg, Md. A childhood neighbor's death from lung cancer inspired Staiger to become a research scientist with the goal of studying and identifying various forms of cancer. The need for a different work schedule after she began her family and the close proximity of the campus to her home led Staiger to teaching.

"The main challenge in teaching science and chemistry to students is the complexity of these subjects, especially if the students did not take advanced courses in middle and high school," she says. "'A' students are always 'A' students, they simply motivate themselves. It's the average students that need to be coached and inspired through mentoring programs and employer apprenticeships," she says.

"And if teachers aren't trained to teach advanced subjects, the students suffer when they get to college."

Charles Smith is the science department chairman and a teacher at West Frederick Middle School in Frederick, Md., and co-recipient along with Staiger and two other Ph.D.s of the 2010 "Reach for the Stars" Awards presented to outstanding STEM leaders by the Frederick Chapter of Women in Defense.

Smith is proud of the state-of-the-art technology used in his department, including Promethean boards, handheld interactive database devices and a weekly Wiki page that allows parents to follow their child's studies and homework assignments. Even so, Smith says his biggest challenge in the classroom is competing with students who use their smart phones and iPods during class. His biggest challenge outside the classroom is generating parent participation.

"We must accept that not every child is going to be into science, but teachers mustn't be nervous about building partnerships with parents, colleges and the business community on behalf of their students," says Smith.

Though she did not major in education, Lindsey Hayes entered the Teach for America program in 2009 as an education advocate. In an effort to minimize inequity in the public education system, Teach for America recruits outstanding recent college graduates from all backgrounds and career interests to commit to teach for two years in low-income, urban and rural public schools. Hayes is in her second year as a special education teacher at the Friendship Public Charter School Collegiate Academy in Washington, D.C. She teaches inclusion pre-calculus and physics to 11th and 12th graders.

"I partner with a co-teacher to teach classes where special ed students are included with

general education students," says Hayes. Her challenge is to "scaffold" their education by creating ancillary tools and aids to give students the boost they need to access current grade level material. "Scaffolding techniques for low level readers such as reading aloud, reading partners and glossaries are relatively easy compared to those for STEM disciplines," she says. "There are few tools available for a student who has reached high school but has never before seen long division."

Hayes is proud of her school's efforts to help students navigate their way to college and is personally mentoring students to that end. To further accelerate the learning process in all disciplines, Friendship stays open in the evening to allow students to study, do homework, be tutored and work in its high-tech SmartLab.

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