DOINGWHATWORKS

Presentation

FULL DETAILS AND TRANSCRIPT

Female Role Models in Math and Science

November 2007

Topic: Encouraging Girls in Math and Science

Practice: Female Role Models

Highlights

- When a girl feels inadequate because of her gender, it's called "stereotype threat," and it can cause her to become anxious and self-conscious, and to perform poorly on tests.
- Role models are vital to offsetting the effects of stereotype threat—especially in math and science.
- Teachers can expose girls to female role models by inviting those role models as guest speakers, arranging field trips to see them in the workplace, and encouraging students to participate in after-school activities and special events where role models are present.
- In using role models, teachers should emphasize that everyone struggles, even the role models, and should highlight common ground and shared experiences between the role models and students.
- Teachers themselves are role models and need to send the message that boys and girls are equals in math and science.

Full Transcript

Slide #1

Welcome to the overview on Female Role Models in Math and Science.

Slide #2

Maria's struggling with a tough decision. She can't decide whether or not to take AP Physics next year. She's always loved science, but she knows that most of her friends aren't taking this challenging class. In fact, she's afraid she'll be the only girl in the class, and that the she won't be able to keep-up with the boys.

Luckily, Maria has a science teacher who understands her concerns, and she got Maria to enroll in a college physics program over the summer. The program not only helped deepen her understanding of physics, but it also allowed her to meet other young women interested in science.

As a result, Maria was able to overcome the "stereotype threat" that girls often face in math and science.

Slide #3

When girls feel inadequate because of their gender, it's called a "stereotype threat." Stereotype threat is the fear that one's behavior will confirm an existing stereotype of a group with which a person identifies—potentially impairing performance in a particular area.

In other words, if a girl believes that other people don't expect her to do well, she tends to perform poorly. She grows distracted, has narrowed attention, becomes anxious and self-conscious, and puts forth less effort—choosing to solve less challenging problems.

As a result, many girls avoid situations that seem to confirm negative gender stereotypes. For instance, in high school they may steer clear of rigorous math and science courses—making them less likely to attend college and develop careers in science, technology, and engineering.

Slide #4

Role models are vital to mitigating the effects of stereotype threat—especially in math and science. Often times, it only takes a single positive role model to make a difference in a girl's academic life. And the more a role model defies stereotypes, the more powerful the impact on student perception and performance.

When girls stop believing in gender stereotypes like "girls aren't good at math" or "science is for boys," they are less likely to struggle with their self-confidence or have negative thoughts when being tested in these subjects.

For example, girls tend to perform as well as boys on math tests when the test is administered by a woman who they know is skilled in math. Just having a woman in charge who's clearly mastered the material, provides girls with a positive role model—countering the effect of stereotype threat during tests.

Slide #5

There are a number of strategies teachers can use to introduce students to female role models in math and science.

Slide #6

First, teachers can invite successful women to be guest speakers. This may include high school or college students who are doing well in advanced courses or women who have successful careers in math and science. Teachers can also arrange field trips to visit female role models in the workplace. Helping girls better visualize how women work in a particular environment may have a powerful impact on girls' beliefs.

Slide #7

Teachers should also encourage students to participate in after-school activities and special events where girls can meet female role models. These may include conferences, discussion panels, university outreach programs, and summer camps.

Mentoring is another powerful strategy allowing students to have ongoing contact with role models. Mentors can be college students, professionals in the field, or even retirees, and they usually provide support as part of after-school programs or internships.

Slide #8

Teachers can have students read biographies of female scientists, mathematicians, and engineers as well—using class discussions and projects to explore how these women got interested in math and science, how they fulfilled their dreams, and the contributions they made. Be sure to look at contemporary figures as well as historical ones.

It's also important for teachers to talk about the increasing number of women in math and science careers. Using data from groups like the National Science Foundation, teachers can show how more and more women receive advanced degrees in math and science-related fields every year.

Slide #9

Finally, educators should encourage parents to take an active role by helping their children connect with positive role models, find mentors, and explore career options. Obviously, there are many ways to use female role models in math and science, so teachers should select strategies that best meet the unique needs of their students.

Slide #10

Here are a few key points teachers should emphasize when using role models…

First, everybody struggles. Even famous role models who accomplish great things struggle, but they find ways to persevere through difficult challenges. It's their passion for the subject that allows them to put in the hard work necessary to overcome their struggles and finally succeed.

Slide #11

Finding common ground between students and role models is also important. Look for details in the lives of role models that relate to what students are going through.

For example, did the role model struggle with certain types of math when she was young? Did she come from a similar background as your students? The more points of connection you can find, the more likely it is that students will see themselves in the role model.

Slide #12

Also remember that the teacher is the most immediate role model and mentor for a student. Teachers should take time out to share their own personal experiences in math and science – especially how they overcame specific challenges.

Lastly, teachers need to send clear, consistent messages to students, letting them know that boys and girls are equally capable in math and science. Simple messages such as, "everything I've read and seen tells me that each of you can do well on this test," can remarkably reduce stereotype threat.

Slide #13

Educators at all levels can mitigate stereotype threat by exposing girls to female role models in math and science—helping them realize that they are just as capable as boys and that they too can lead successful careers in these fields.

Slide #14

To learn more about introducing students to female role models, please explore the additional resources on the Doing What Works website.