SCIENCE & WELLNESS

Giving Girls More Hands-On Opportunities To Learn About STEM Can Help Close The Gender Gap

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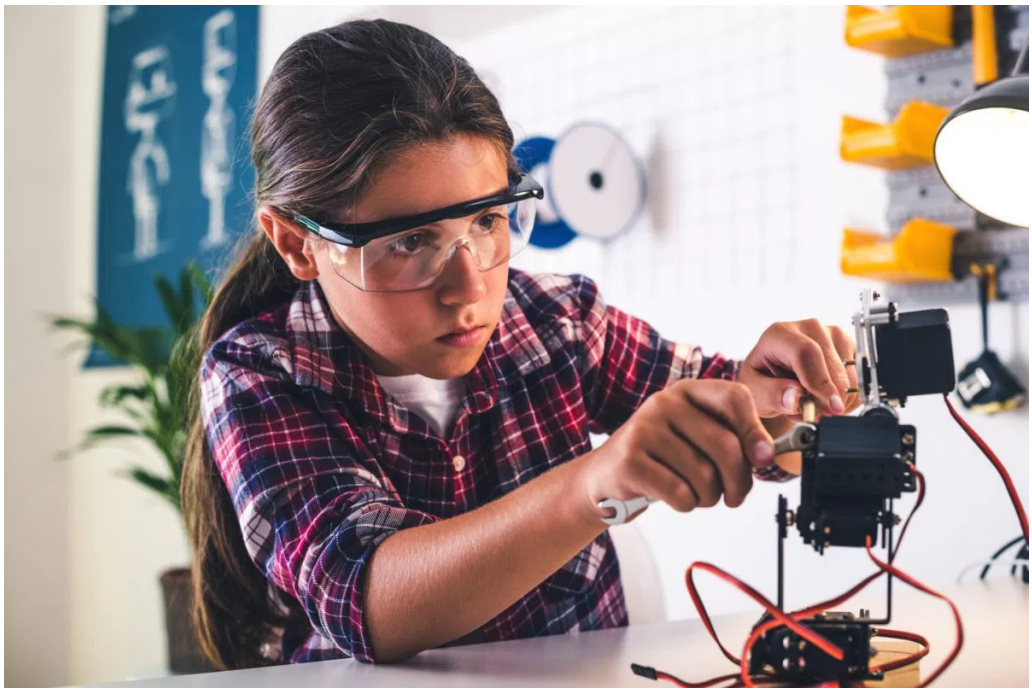

Although technology is now entrenched in our children's daily lives, girls continue to lag behind boys in the fields of science, technology, engineering, and math. According to the National Science Foundation, in 2012 women earned 43 percent of bachelor's degrees in math and statistics, and 41 percent in physical sciences, 18 percent in technological fields like computer science, and 19 percent in engineering.

Why is this the case?

Cultural stereotypes in the United States imply that girls have lower ability in technological fields compared with boys. This causes girls to start believing they are not good at math, science, and even computers starting at a young age.

Girls typically receive less exposure to technology-related activities. From an early age, girls and boys are directed to play with different types of toys. As early as elementary school, girls spend less time playing with computer games, technological toys, spatial games, and science-related toys and kits. By sixth grade, boys spend more time than girls playing with electric toys outside of school as well.

New research from the University of Washington's Institute for Learning & Brain Sciences (I-LABS) explored why this disparity exists and what can be done to encourage more female students to become interested in STEM. The researchers wanted to find out if parents and educators gave equal experiences to boys and girls, would this change girls' interest and success in STEM?

The study, published in the Journal of Experimental Child Psychology, involved 96 six-year-olds – half boys and half girls – who were randomly assigned to one of three groups. In the first group, each child programmed a robot and then answered survey questions. In the second group, each child played a storytelling card game and then answered the same questions. Those in the third group only answered the questions. The survey was designed to collect the children's opinions about technology activities, like the robot, and their beliefs about whether girls or boys are better at computer programming and robotics.

For the robot activity, children chose an animal-themed robot. They first followed step-by-step instructions on a smartphone to direct the robot to move forward, backward, right or left. Then they input the instructions themselves to program the phone to control the movements of the robots.

The researchers found that both boys and girls enjoyed the experience of programming the robot movement. The most important finding is that this exercise brought the girls' interest and motivation in STEM up to the level of the boys. In fact, when exposed to a computer-programming activity, 6-year-old girls expressed greater interest in technology and more positive attitudes about their own skills and abilities than girls who did not try the activity. The robot activity reduced the gender gap in technology interest by 42 percent, and the gap in self-confidence by 80 percent.

Unfortunately, the robot activity did not appear to change the children's stereotypes about whether boys or girls are better at programming and robotics. While the girls who programmed the robot indicated greater confidence in their own abilities, that view did not change their stereotypes that were already ingrained in them from American culture. The researchers suggest that doing more STEM-related activities on a consistent basis may help the children overcome these stereotypes. One idea is to have the children meet female scientists, engineers, and computer programmers to hear about their work. The researchers hope to test this theory in future studies.

Overall, the study results suggest both a need and an opportunity for teaching STEM activities early on in elementary school. When young girls are exposed to these types of activities, they become more interested in them from a young age. The most important tip that the researchers provided is to make sure the activities are accessible to all children – both girls and boys – in a fun way to get them excited about STEM.

You can encourage your daughters to become more interested in STEM by signing them up for summer camps, after-school programs, and other activities. Try visiting science museums or theme parks like Legoland that focus on STEM activities. For more ideas, check out these 5 Picture Books to Help Get Little Kids Interested in STEM and 10 Simple Ways to Empower Girls to Love STEM.

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