

Engaging Girls and Underserved Audiences in STEM

Sources: *Why So Few: Women in Science, Technology, Engineering, and Mathematics*. Catherine Hill, Chrstianne Corbett, and Andresse St. Rose, AAUW, 2010 (<http://www.aauw.org/learn/research/upload/whysofew.pdf>) and *Encouraging Girls in Math and Science (NCER 2007–2003)*. Washington, DC: National Center for Education Research, Institute of Education Sciences, U.S. Department of Education (http://ies.ed.gov/ncee/wwc/pdf/practice_guides/20072003.pdf/).

The Explore: Life on Mars? educational resources and materials have been developed with careful consideration for use in serving girls, a traditionally underserved audience in science, technology, engineering, and math (STEM).

Although the overall trend of girls in math and science at the high school level is good, far fewer girls than boys are entering college with the intent of pursuing a Science, Technology, Engineering, or Math (STEM) career or major. Both social and environmental factors contribute to the underrepresentation of girls in STEM. Research suggests that girls tend to believe that these abilities are innate, while in reality, they are skills that can be acquired and improved with experience and training. By understanding these factors, educators can help to overcome these challenges.

Research has shown that girls benefit from learning the design process and taking part in STEM activities that are project-based. These activities should focus on collaboration and teamwork, not competition. Educators/Activity Facilitators should give the mission or project a clear purpose and encourage the girls to work together. The following are some “**Advice from the Literature on Engaging Girls Tips**” from the Institute of Education Sciences (IES) Engaging Girls in Math and Science Practice Guide:

- Understand and communicate that academic abilities are expandable and improvable
- Expose girls to female role models who have achieved in math in science in order to promote positive beliefs regarding women's abilities
- Foster girls' long-term interest in math and science by choosing activities connecting math and science to careers (don't reinforce existing gender stereotypes, choose activities that spark initial curiosity about content)
- Spark initial interest
- Embed activities in interesting and relevant contexts (example for middle school age: use real-world problems like build a skateboard ramp on a budget/hovercraft that flies so many students)
- Provide engaging informational and narrative texts
- Use project-based learning, group work, innovative tasks, and technology (i.e. web)
- Provide ongoing access to resources for students who continue to express interest in a topic after the class has moved on
- Provide opportunities for students to engage in spatial skills training
- Encourage girls to play with toys involving spatial skills, such as building toys
- Require answers that use both words and a spatial display