Detailed Activity Descriptions

Sisters4Science

Sisters4Science (S4S) allows sixth to eighth-grade girls to engage in high-quality, hands-on STEM to combat perceptions that STEM is for boys and allow girls to develop a STEM identity in a low-pressure environment. Research shows that girls first start to lose interest in STEM fields around the age of 12 (American Association of University Women, 2000) and that girls report being less interested in STEM careers than boys (Riegle-Crumb et al., 2011; Robnett and Leaper, 2013; Farkas and Leaper, 2016). Traditional public science education models are ineffective at getting girls engaged in science, resulting in girls internalizing at an early age that they are bad at science or it is not for them.

S4S positively impacts girls’ educational goals, career aspirations, and their confidence and attitudes towards STEM by engaging girls as co-creators of curriculum based on their interests and allowing them to work alongside female STEM mentors. In addition to STEM exploration, reflection through reading, journaling, conversation, and team-building activities promote critical thinking and 21st-century skill development. During a culminating Reflection of Knowledge event, girls present what they have learned in the program. The following NGSS standards are covered:

<table>
<thead>
<tr>
<th>S4S Activity</th>
<th>NGSS Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-PS2-1, 2, 4, 5 Motion and Stability: Forces and Interactions</td>
<td>MS-LS1-3, 8 From Molecules to Organisms: Structures and Processes</td>
</tr>
<tr>
<td>MS-PS3-3, 5 Energy</td>
<td>MS-ESS1-1, 2, 3, 4 Earth’s Place in the Universe</td>
</tr>
<tr>
<td>MS-PS4-2 Waves and their Applications in Technologies for Information Transfer</td>
<td>MS-ETS1-1, 2, 3, 4 Engineering Design</td>
</tr>
</tbody>
</table>

1. Linkages to Academic Learning
By helping students understand the link between what they learn in school and the outside world, Programs shall help participants become engaged in their learning and reinforce success in school and life/beyond. Respondents shall encourage increased school attendance, improved academic performance, and postsecondary planning.

2. Civic Engagement and Service Learning
The ongoing opportunity to engage in service-learning to benefit others or address community needs is an evidence-based strategy for developing youth leadership skills. Programs shall consider how to include a civic engagement component that allows participants to use their skills to contribute to their local communities or communities at large to learn the value of civic engagement.

3. Social-Emotional, Employability, and Life Skills
Social-emotional and “soft” skills (e.g., leadership, teamwork, communication, critical thinking, and decision-making) are critical to college and career success. Programming for older students may want to offer an expanded opportunity for students to discover and reinforce career interests. Programs shall include elements that promote social-emotional learning and college and career readiness in developmentally appropriate ways for students Pre-K-12.

4. Authentic Learning Environment
Authentic learning environments frame student learning in the context of the world around them, engage them in problem-solving and allow them to construct their own learning. Programs shall engage students in authentic tasks that are hands-on and have real-world applications, including but not limited to the teaching of real-world competencies (e.g., social skills, self-management skills, and self-directed learning, and workplace values). Instructors of Programs shall teach using multiple methods, including demonstration, modeling, project-based learning, and coaching. Programs shall include culminating projects and/or events that allow students to demonstrate and celebrate their learning.

5. Parent and Family Involvement
Programs engage parents/guardians/families so that they will be involved in students’ learning experiences.