NASA Science4Girls and their Families: Connecting Local Libraries with NASA Science Education Programs to Engage Girls in STEM

**Introduction**

- NASA Science4Girls and their Families (NS4G) partners NASA science education programs with public libraries to provide hands-on science, technology, engineering, and math (STEM) activities and career information for girls and their families, along with training for librarians, in conjunction with Women’s History Month.
- NS4G is a collaboration among education teams within the four NASA science divisions: Planetary, Earth, Astrophysics, Heliophysics
- Over 73 NS4G events have been held at 42 libraries since 2012.

**Why Girls?**

- Boys are three times more likely to be interested in STEM subjects and careers than girls during their K-12 student years [4].
- Women remain underrepresented in the science and engineering workforce, with the greatest disparities occurring in the physical sciences, engineering, and computer science [5].
- Minority women comprise fewer than 1 in 10 employed scientists and engineers [6].
- Only 14% of planetary science faculty are women, which is far below the 40% of PhDs awarded to women in recent years [7].

**Why Libraries?**

- Why Families?
  - Children whose parents are active in their science learning achieve greater success regardless of socioeconomic status, ethnic/racial background, or the parents’ own level of education [1].
  - The more frequent or involved parents get in their children’s science learning, the more confident and engaged their children will be, leading to beneficial effects on their children’s achievement [2].
  - How parents view and talk about science can influence a child’s attitude – and how she approaches learning [3].

**Research-based Best Practices for Engaging Girls in STEM**

**Examples of In-person and Remote Engagement**

- **Examples of in-person engagement at libraries** include hands-on activities, short presentations, multimedia, star parties, story-time, training for librarians, or a combination of these.
- **Examples of remote engagement** include participating in webinars or Google+ Hangouts and creating online resources such as career profiles. Remote partnerships can be with a single library or multiple libraries at one time.

**NS4G Strategies**

- Use of research-based, field-tested best practices, educational activities, and resources provided by NASA science education teams.
- Collaborations with libraries as community-centered, free-access venues.
- Partnerships with local and national organizations that share a common focus and foster innovation.
- In-person and remote engagement of audiences and access to science programming and resources.
- Evaluation of effectiveness to improve future events, partnerships, and collaborations.

**References:**