Astro4Girls and Their Families: Sharing Science via Public Libraries

http://www.ala.org/programming/astro4girls

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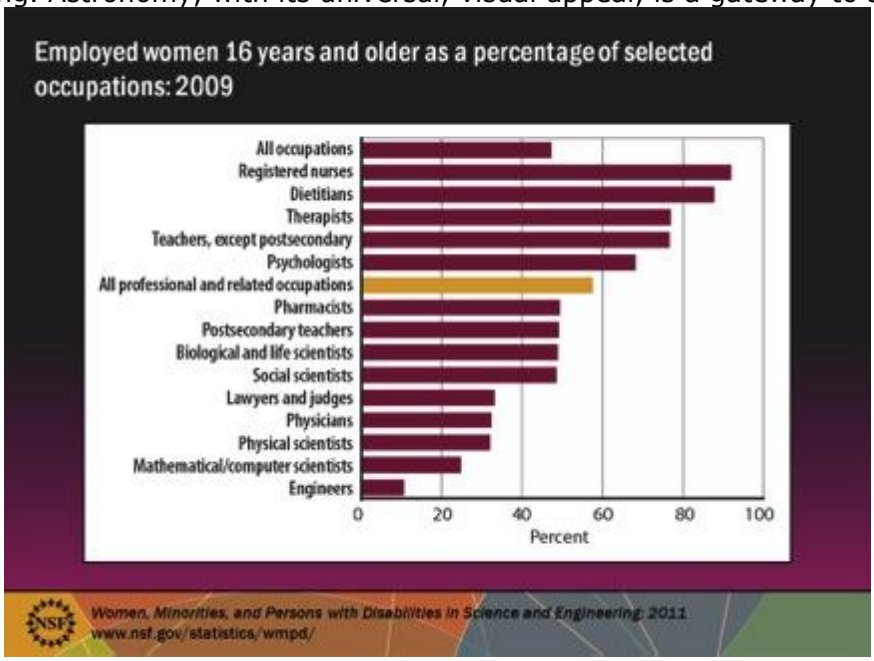
(Note to poster authors: The poster is not meant to be comprehensive. It contains only a small amount of information and selected highlights from your library events; we hope these give a flavor of the events to whet poster-readers' appetite to know more from you. Please send me edits/comments, and suggest/include any photos/images you'd like to see here.)

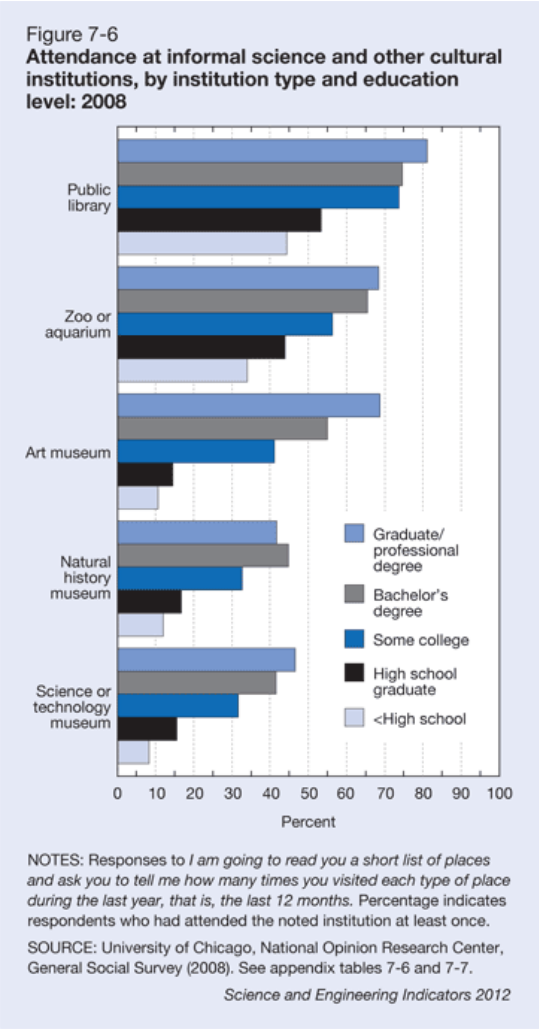
Astro4Girls and Their Families: Overview

- Engages girls and their families at public libraries to discover the Universe for themselves and learn about science and STEM careers
- Leverages NASA-funded, field-tested astronomy activities, resources and expertise
- Develops strategies to enhance gender diversity in STEM (a NASA priority) based on research and best practices
- Provides astronomy educational resources and professional development for librarians to enhance science programming in libraries
- Celebrates women's contribution to astronomy and science
- Is a collaboration coordinated by the NASA SMD Astrophysics E/PO Forum

- Why girls? Despite recent progress, women are underrepresented in physical sciences, math and engineering. Research shows it is important to engage women in science and math from when they are young. Astronomy, with its universal, visual appeal, is a gateway to stimulate interest in science.



- Why families? Girls' engagement in science is shaped by their families and environment.
- Why libraries? Nationwide, libraries attract more visitors than science museums. Librarians (usually not trained in STEM) are looking for more science programs with accurate, engaging, up-to-date content.



Astro4Girls Pilot Program: March 2012

- Five NASA SMD-funded Astrophysics E/PO teams each worked with 1-2 public libraries nationwide
- Reached over 200 girls (main target audience) and 200 other participants (students and public of all ages, including girls' families)
- Overall program coordinated by NASA SMD Astrophysics E/PO Forum; library participation coordinated by the American Library Association Public Programs Office; funding through NASA EPOESS grant "Visions of the Universe" included stipends to libraries

<u>Sonoma NASA E/PO Program:</u>

- Lynn Cominsky and Educator Ambassadors Neta Apple, Teena Della and Pamela Whiffen partnered with Grinnell Public Library (IA), Cottage Grove Public Library (OR), and Weber County Library (UT)
- Offered hands-on astronomy events for girls and their families, and resources and professional development for librarians and teachers about astronomy basics, scales in the Universe, black holes, high-energy phenomena
- *2-3 PHOTOS with captions – kids/teachers making "Edible active galaxies," girls making Kepler Star Wheels*

<u>STScI Education Program:</u>

- Bonnie Eisenhamer and Holly Ryer partnered with Mobile Public Library (AL) and Holly Springs Public Library (NC)

- Trained librarians and provided resource kits to offer hands-on astronomy student workshops about light, color, lenses and space telescopes. Participating girls hosted science events for their families.
- *1-2 PHOTOS of girls building refracting telescopes, etc.*

Harvard-Smithsonian Education Team:
- Mary Dussault and Erin Braswell partnered with Ridgefield Public Library (CT) and West Unity Public Library (OH)
- Trained librarians to use MicroObservatory for DIY Astrophotography, and offered video-chats with girls. Libraries organized exhibits of astrophotographs taken by girls and their families.
- *1-2 PHOTOS – example, Ridgefield librarian's blog with astrophotos*

SOFIA/SETI Institute Education Team:
- Pamela Harman partnered with the Sunnyvale Public Library (CA)
- Presented a talk, demo and hands-on activities about electromagnetic spectrum; organized talks by SOFIA scientists
- *1-2 PHOTOS*

NASA Goddard Astrophysics Division Education Team:
- Sara Mitchell and Sarah Eyermann partnered with the Varnum Memorial Library (VT)
- They trained the librarian and a retired teacher via video in building simple spectroscopes and in hands-on activities about UV and IR light; teacher led the event at local elementary school
- *1-2 PHOTOS*

Evaluation and Lessons Learned

Benefits to target audience: (From event evaluation forms)
Astro4Girls
- Increased audiences' interest in astronomy and science
- Inspired them to find out more about astronomy and STEM careers
- Made them realize that girls and women can do – and are doing – science

Benefits to libraries/librarians: (From final reports submitted by libraries and anecdotes)
- Increased visitors to library
- Enhanced local/community partnerships, e.g., with schools, community colleges, museums, Girl Scouts, children's organizations, amateur astronomers, scientists, etc.
- Being seen by community and local government officials as an integral community organization that provides exciting, educational opportunities
    - *Quote from Mobile librarian, "City Councilman … asked to receive personal notification about programs like these…"*
- Hands-on activities helped extend library children's programming beyond the usual into science, or enhanced the science programming they offer; empowered librarians to do and share science.
    - *Quote from Ridgefield librarian, "I have begun planning with the school to visit and instruct them in the use of the [MicroObservatory] telescope network."*

Lessons learned and responsive practices:
- Present enough background information to engage audiences fully in the activities.
- Accommodate new activities into pre-existing E/PO programs at library.
- Start early because library-school/local organization partnerships need advance planning and work, even if previous partnerships exist.
- Libraries are creative, enthusiastic and helpful informal education partners. Offer field-tested STEM resources with adequate background material and training to librarians (who rarely have a science background).
- Stipends to libraries are always helpful.
- Be patient, persistent and extra clear when communicating with libraries, which are often understaffed.
- Collaboration with other E/PO programs and non-traditional partners to effectively reach underserved audiences, and extend the utility of your E/PO resources.

Be Part of Astro4Girls!

- Please contact us at AstroForum@stsci.edu
- Join the collaboration – coordinate with NASA-funded E/PO programs in helping libraries nationwide host Astro4Girls events during future Women's History Months. Contribute to the discussion list.
- Use Astro4Girls resources in your own STEM programs for girls. Astro4Girls resources include NASA-funded educational activities/curricula/etc., a website (www.ala.org/programming/astro4girls) with a "site support notebook" of online resources, compilations of best practices for girls and for STEM programming in libraries, Astro4Girls publicity kits and event evaluation forms, etc.
- Contribute your resources to Astro4Girls – yourself (as role model in STEM), your curricula, your research results on girls in STEM, etc.
- Share ideas and brainstorm about how we can work together to increase diversity in STEM.