

# Great Science for Girls



Great Science for Girls, a five-year initiative of the Educational Equity Center at FHI 360, with funding from the National Science Foundation.

**Great Science for Girls: Extension Services for Gender Equity in Science through Afterschool Programs (GSG)** works with intermediaries to build the capacity of afterschool centers to deliver evidence-based programs that will broaden and sustain girls' interest and persistence in STEM. Intermediaries are organizations that provide training and technical assistance to networks of afterschool centers in their regions.

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## COMING SOON

### AUGUST 2011

GSG Program Quality Tool and Manual available online

### SEPTEMBER 7, 2011

GSG Advisory Committee Sustainability Planning

## AED Transitions to FHI

As you can see from the logo, we have a new name! On July 1, 2011, FHI acquired AED's programs, expertise and other assets. The new entity, FHI 360, is a global development organization with a rigorous, evidence-based approach. Its professional staff includes experts in health, nutrition, education, economic development, civil society, environment and research. FHI 360 operates from 60 offices with 4,400 staff in the U.S. and around the world. FHI 360's commitment to partnerships at every level and its multidisciplinary approach enables it to have lasting impact on the individuals, communities and countries served, improving lives for millions. We look forward to continuing GSG, and all our important work in education, within this new organization. <http://www.fhi360.org>

## Congratulations to Techbridge

After ten years as a program of Chabot Space & Science Center, *Techbridge* is now its own independent non-profit. *Techbridge* will continue to offer afterschool programs for girls in Oakland and the Bay Area, and is expanding services to support programming for girls in STEM with partners across the country including GSG. <http://www.techbridgegirls.org>

## Congratulations to SciGirls

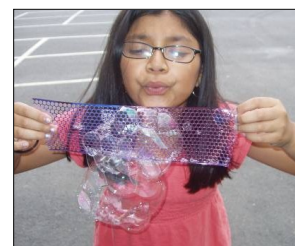
Twin Cities Public Television's production of *SciGirls* for PBS audiences nationwide was recognized June 17, 2011 with a National Emmy at the 38th Annual Daytime Entertainment Creative Arts Awards. *SciGirls* won the category "New Approaches" for its unique merging of television and the web. <http://pbskids.org/scigirls>

## INTERMEDIARIES SPOTLIGHT

In this issue we are pleased to feature the work from the newest GSG Intermediaries: New Jersey School-Age Care Coalition (NJSACC), University of Missouri Extension 4-H, and Oakland Success.

### New Jersey School-Age Care Coalition

Great Science for Girls in New Jersey is a great success. Eight program sites, serving on average 15-20 students, embraced the *After-School Science Plus* curriculum. Some programs took the initiative to expand the curriculum activities by combining them with other science lessons that tied into the theme. Several programs are in the process of taking the steps to train site coordinators at additional sites to be able to provide the curriculum activities to more students next year. With this expansion, NJSACC will more than double the amount of GSG sites next year. Jessica Heiberg, Director of Program Services, reports, "It has truly been a wonderful experience to go out and visit the sites and see how excited the children are to be participating. They are asking excellent



questions, demonstrating good communication skills, working as a team and engaging all their group members and most importantly having fun with science! They are eager to experiment and take chances to see what ideas work and what ideas may need tweaking.” NJSACC is committed to continuing that spark of excitement and getting more programs tuned in to how much fun science can be. They have launched a “Full STEM Ahead” blog that keeps programs up to date on STEM-related projects, activities and opportunities. Jessica says, “We know what a unique position afterschool programs are in to provide the chance to explore and experiment outside of the traditional school day. NJSACC looks forward to providing the afterschool community with the training and tools to engage the children in their programs in STEM.” <http://www.NJSACC.org>

### University of Missouri Extension 4-H

Jackson County 4-H Extension Service at the University of Missouri continues to grow their STEM and GSG program offerings to the community. Sites have successfully implemented several themes from *Wonderwise* and have utilized local 4-H experts in some of the activity facilitation. Summer programming is in full swing, and in the fall sites will continue with *Wonderwise* and many will begin implementation of *Afterschool Universe*. Intermediary staff will facilitate monthly professional development trainings and provide technical assistance for these enrichments. University of Missouri Extension 4-H is also an integral member of Project Liftoff that hosted the Midwest Afterschool Science Academy (MASA) conference of stakeholders and program leaders in April 2011. 4-H Youth Development Specialists, Leon Moon and Beth Rasa, also have contributed to a guidebook published by 4-H on expanding the quality and quantity of out-of-school science programming, entitled *4-H Science in Urban Communities – Promising Practices Guide*. More information can be found at <http://urban4hscience.rutgers.edu>

### Oakland Success

Oakland Success in the Oakland Unified School District has reached 84 school-based programs across 17 community-based organizations with their GSG initiative. Sites have utilized *After-School Science Plus*, *Techbridge* and *Girls at the Center* curricula and generally facilitate science once or twice per week. Program leaders have successfully worked to make connections to careers by fostering discussions and research of scientists in the field. Next year, with guidance from the staff at TASI in Baltimore, Oakland Success aims to implement a network of volunteers and sites to bring in STEM role models. Some reflections from site staff members include: “It is always the most touching thing seeing the hands of our students shoot up into the air as their faces display the confidence in answering questions.... To me, that is why we teach. We get students into discovering, questioning and being flat out curious about things.” “We have students who are sometimes discouraged in school because they aren’t the best at math, reading, or writing, but these same students show excitement when they are doing science.” “I am glad to see that there is some offering in our students’ lives that gives them the opportunity to want to learn.”



## NEWS FROM THE FIELD

### Alternatives, Inc.

Afterschool sites in Newport News and Hampton, Virginia, continue to do great science that includes activities from *After-School Science Plus* and *Wonderwise*. Parent letters have been successful at reaching out to families in the programs. Shireen Hansen, Youth Development Coordinator at Alternatives, is looking forward to including *Techbridge*’s new CSI activities in her programs.

### Chicago Area Project

La Causa Community Committee’s (LC3) Program Director, Irma Chavez, has always had a passion for science. GSG sparked and renewed that gusto and zeal and so the Great Science Club was born at LC3. Utilizing GSG curriculum and a partnership with the Museum of Science and Industry (MSI), Irma recruited over 100 parents and youth for “Night at the Museum of Science and Industry” to partake in a hands-on and minds-on evening of exploration, fun, learning and adventure. MSI provided transportation, experiments, planned activities, science freebies, tours and scientists to answer questions, facilitate conversation and assist in the hands-on activities. For many of the parents this was their first encounter with MSI and science. LC3 youth participants participate weekly in the Great Science Club all year-around and it has generated unbelievable enthusiasm among all its members and even produced a First Place Science winner at the local program feeder school.

### DC Children and Youth Investment Trust Corporation (CYITC)

During the Fall, some students attended the USA Science and Engineering Festival to demonstrate fun activities with the community. Currently, CYITC is working with the DC Parks and Recreation Department to set up Youth Development Centers in nine public swimming pools around the city. The goal is to integrate some low-cost science activities with the program. The team is also in discussion with TASC in New York City in regard to setting up successful Expanded Learning Time (ELT) programs.

### Youth Development Training and Resource Center (YDTRC)/The Consultation Center

Several GSG programs continue to operate successfully across the state of Connecticut. At the STRIVE E-3 middle-school program, Head Teacher Mary Miraglia describes, "I'm most amazed about the connections [the kids have] made to their real lives" and how excited they are to be doing the activities and taking them home. Tracey Lay, Director of School Age Programs & Development Services, at Education Connection shares, "Classroom teachers in day-school have come to us exclaiming that they are thrilled to work with the *After-School Science Plus* curriculum through GSG. They now have the opportunity to explore the hands-on activities and play with the kids, something that is not possible during school hours." In March, The Franklin Institute's *Girls at the Center* curriculum was featured in an afterschool science conference organized by YDTRC.

### San Francisco School District/ExCEL After School Programs

The STEM initiative in San Francisco has been growing strongly. An emphasis on increasing the comfort level of staff and facilitators with science has paid off, and partner afterschool centers are now excited to attend the regularly scheduled cohort meetings. Family science nights have been great opportunities for students to showcase what they've learned. Some sites are even participating in Science Olympiad competitions. ExCEL District Coordinator Karen Polk is currently producing a video to highlight the great work of the program.



### The After-School Corporation (TASC)

The After-School Corporation continued this year offering a menu of STEM enrichments to over 60 New York City schools and community-based organizations. GSG curricula included *After-School Science Plus*, *Wonderwise* and *Afterschool Universe*. In order to confidently lead science activities, site staff members were trained several times during the year on each curriculum, and then were supported through ongoing technical assistance and site visits. TASC has actively disseminated this system model nationally, including the publication of a handbook that focuses on science after school: *Science After School: How to Design and Run Great Program Activities*. TASC also contributed to the Collaborative for Building Afterschool Systems' (CBASS) publication of *Frontiers in Urban Science Education (FUSE) Resource Guide*. Both can be found at <http://www.tascorp.org> in the Resources section under Document Library.

### The After School Institute (TASI)

TASI effectively instituted a STEM volunteer network in Baltimore to bring mentors into their program sites. They recruited from local colleges/universities, businesses, and online community groups. To introduce and match potential volunteers with programs, they used a "speed-dating" model. This allowed the programs and the volunteers to get a sense of what might work in terms of schedule, location, interests, etc.



### MHC After 3

Martinsville Henry County After 3 and the Virginia Museum of Natural History continue to provide great STEM programming to the community that includes activities from *After-School Science Plus*. The staff members are excited to increase STEM service to two days per week at each site throughout the school year. In addition, Glenda Hairston, the Out-of-School Education Coordinator at Virginia Museum of Natural History, will be implementing *Techbridge* in the program during the summer and fall 2011.

### Partners in Out-of-School Time (POST)

In March 2011, POST invited the GSG team back to Charlotte, NC for an additional cohort of enthusiastic new sites that are implementing *After-School Science Plus*. As part of the visit, community leaders in business and education were invited to an enjoyable networking event to encourage local GSG and STEM partnerships. Additionally, plans were laid for Jennifer Tampa (Charlotte Mecklenburg Schools' (CMS) After School Enrichment Programs) and Kathy Vinson (POST) to conduct intensive science training for 41 CMS summer camp staff. Most of the staff approached this workshop with trepidation, due to their lack of comfort studying science, and especially in offering science to their youth. However, at the end of the two-hour session, most felt well-equipped to offer a full week schedule of *After-School Science Plus*. They were quite interested in the other "uses" of Oobleck – filling a pool to "walk on water," and putting it onto a speaker to watch Oobleck "come to life." The training included the literacy pieces, extended learning opportunities, and equity discussions on eliminating stereotypes.

## EVALUATION HIGHLIGHTS FROM YEAR 4

Using a mixed-method design, including structured and unstructured observations, surveys and interviews, Comprehensive Research and Evaluation Services (CRES) documented the Year 4 implementation and short-term outcomes of GSG. Following are some highlights.

### Implementation

- Ten intermediaries, over 100 afterschool centers and more than 3,600 youth participated in the initiative in Year 4.
- EEC provided professional development and re-boot institutes to over 200 intermediary and afterschool center staff. Across the initiative, trainings received uniformly high ratings.
- EEC also provided hundreds of hours of technical assistance through its website, webinars, e-mails and phone calls.
- Intermediaries recruited centers into the initiative, arranged trainings by EEC, provided technical assistance and curriculum training to hundreds of afterschool center staff.
- Some intermediaries introduced centers to volunteers and women scientists to serve as mentors, to assist in sessions, serve as speakers and arrange for visits to science institutions.
- Observations of 13 sessions in which GSG curricula were delivered showed that:
  - Hands-on activities were in evidence in all sessions;
  - Most staff encouraged inquiry by youth;
  - Youth were highly engaged in activities; and
  - Emphasis on gender equity was variable and could be strengthened in some centers.

### Outcomes

- Staff and youth reported enjoying being part of GSG and felt they gained new skills through the initiative.
- Surveys indicated that staff and youth learned about the importance of science, became more aware of science careers and less stereotypical in their beliefs about who could do science.
- Staff who felt curriculum trainings were useful were more satisfied with GSG. This satisfaction, in turn, was related to reported staff change and perceived changes in youth.
- Youth who attended more GSG sessions reported greater interest in science, change in science self-concept and opinions about science.

## SUSTAINABILITY TOOLS

### GSG Program Quality Tool and Manual

Quality programming is at the heart of Great Science for Girls (GSG). However, defining, measuring and improving program quality can be a difficult task. In order to help afterschool programs implement GSG in a way that promotes general youth development as well as specific GSG values such as gender equity and hands-on, inquiry-based informal science education, the GSG team worked with the David P. Weikart Center for Youth Program Quality, a division of the Forum for Youth Investment and developers of the validated and widely used Youth Program Quality Assessment, to create the GSG Program Quality Tool and Manual.

The Tool was introduced at the GSG Professional Development Institute held in November 2010 at The Franklin Institute in Philadelphia, PA. One of the goals of the Institute was to enhance the skills of intermediaries and community partners in using assessment and monitoring tools effectively to assist GSG afterschool sites.

The GSG Program Quality Tool is a low-stakes assessment tool to help afterschool programs and the organizations that operate them ensure high quality programming in order to achieve the outcomes intended by GSG. Through observation and interviews, programs using the tool can learn about the strengths of their offerings, as well as identify areas to improve. The tool was created with the goal of facilitating understanding and awareness of best practices, as well as providing a vehicle for staff to share ideas, learn from each other, and plan for program improvement.

The GSG Program Quality Tool was designed to offer flexibility in the way it is implemented. Rather than prescribing a specific process for using the tool, we offer several suggestions for use, believing that, while programs differ in their needs and capacity to conduct self assessment, the assess-plan-improve process is advantageous for all programs. Suggested uses include:

- Frontline staff can review the GSG scale items and assess their own sessions
- Pairs of frontline staff can use the tool to observe each other and guide activity facilitation/teaching
- An administrator can use the tool to facilitate observations and guide ongoing mentoring/coaching
- An administrator/director can train a team to use the tool to observe and collect data from a representative sample of sessions, and then conduct a team scoring meeting and develop an improvement plan.

In August, you will be able to download the tool and manual on the Great Science for Girls website:  
<http://www.greatscienceforgirls.org>

### Looking for “Stories from the Field”

The production of the *Handbook of Gender Equitable STEM Strategies* is in high gear. Several programs already have shared terrific “stories from the field,” which form the core of the handbook. We’re interested in how you have expanded GSG to new sites, how you provide professional development, and how you have reached into your community to find financial and human resources. So, if you have great stories about strategies that have moved your GSG program forward, please contact Barbara Sprung ([bsprung@aed.org](mailto:bsprung@aed.org) or 212-367-4585) and you will see your work in print.

## RESEARCH ROUND-UP

### Club2School: Research Highlights

Angela Calabrese Barton of Michigan State University and Edna Tan of the University of North Carolina at Greensboro have conducted research through the Club2School project that provides insight on how out-of-school experiences support girls in pursuing STEM careers. The multi-method longitudinal research in five cities indicates that having opportunities to develop novel identities such as a “community science expert” supports girls in overcoming the alienating experiences they encounter in school science. This mechanism for identity development is made possible when girls have opportunities for productive interactions with practicing science and engineering experts and role models who support them in engaging both science and teaching along side them. Such side-by-side science and teaching practice supports girls in developing core science practices at the same time as they have opportunities to practice leadership and authority in science as they educate less knowledgeable but caring others in ways that are culturally relevant and scientifically rigorous (i.e., siblings, parents, community members). Such identity work appears to transfer to school settings, where girls hold an “I’m an expert” attitude.

This study, conducted in urban settings with underrepresented groups, points to the importance of science identity development (e.g., seeing oneself as having expertise in science) and participation in the STEM pipeline for minority girls. For more information about this study contact Dr. Angela Calabrese Barton ([acb@msu.edu](mailto:acb@msu.edu)) or Dr. Edna Tan ([e\\_tan@uncg.edu](mailto:e_tan@uncg.edu)).

*Pictured on right, Jerisse and Chanelle become “science experts” and show the results of their efforts to educate the community on the environmental and personal impact of changing from incandescent to compact fluorescent light bulbs.*



## RESOURCES

**Girls Communicating Career Connections (GC3)** is a youth-produced, video series and companion educator materials on science and engineering careers, developed *by* and *for* middle-school aged girls. Educator materials include an Educator’s Guide, with suggested uses for the videos in both formal and informal settings, and a Video Production Curriculum, which aids educators in creating videos of their own. GC3 is a project of Education Development Center, Inc., and is funded by the National Science Foundation’s *Research on Gender in Science and Engineering* program.

<http://gc3.edc.org>

### **Women in Science, Technology, Engineering, and Mathematics ON THE AIR!**

A radio series to increase the role of women with disabilities in STEM. Listen to stories about fascinating young women working and learning in science, technology, engineering, and mathematics (STEM) fields; and learn about programs and practices throughout the United States designed to broaden the participation of women in STEM.

<http://www.womeninscience.org>

### **Career Girls**

An organization dedicated to providing young girls of all income levels and ethnic backgrounds with the academic tools and support they need to achieve their professional aspirations. Includes more than 200 videos that provide a “real world” context through interviews with positive female role models, many that focus on STEM careers.

<http://www.careergirls.org>

### **Memo to the Educate to Innovate Campaign**

This memo recommends the top five strategies to increase the number of girls and women in science and engineering education. It is based on the “July 19<sup>th</sup> Collaboration,” a meeting of 20 lead organizations that developed recommendations related to the third priority of the Educate to Innovate campaign, that is to “expand STEM education and career opportunities for underrepresented groups, including women and girls.”

<http://www.ncwge.org>

### **False Start: A Missed Opportunity for Women and Girls in STEM in the Race to the Top Awards**

In its applications for Race to the Top funds, a state was expected to “demonstrate high-quality plans to prepare more students for advanced study and careers in STEM, including underrepresented groups and women and girls” (criterion iii). This report by NAPE (the National Alliance for Partnerships in Equity) reaches the overall conclusion that the responses to criterion iii were inadequate and relied on “the general use of programs serving all students as meeting the needs of underrepresented students, a notion not supported by research.” The report also includes recommendations for future Department of Education competitive grants programs.

<http://www.napequity.org>

**Serving Up Science and Engineering (to girls especially): A Quick Briefing** is a guide for education outreach programs on recruiting girls and minorities to science and engineering. It offers a quick digest on a range of topics from activities to use with students, to who’s doing what in this area and why.

<http://momox.org/servingup.html>

**WEPAN Knowledge Center (WKC)** is an online resource for research, best practices and professional communities dedicated to advancing all women in engineering. Now one-year old, the WKC resources have grown to 950, and they provide a relevant and effective way to focus on information related to women in engineering gathered in one location.

<http://wepan.org>

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EDUCATIONAL EQUITY CENTER