Young Minds: Reaching Youth Audiences

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IN THIS ISSUE March/April 2010

According to Positive Youth Development theory, youth programs should promote positive relationships, provide safe environments, build confidence and competence through meaningful work, foster leadership opportunities, and recognize youth for their assets. Science centers incorporate all of these elements into their youth programs, while introducing youth to science careers, developing their science literacy, or giving them tools to address global issues. In this issue, we look at a variety of youth programs, aimed at young people ages 10 to 19.

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Cover: Youth programs in science centers help young people gain career skills, tackle global issues, and develop a positive self-image. Photos, clockwise from top: A group of Enablers (youth floor staff) gather at Thinktank (courtesy Thinktank, Birmingham Science Museum); Kevin Carmona-Murphy (left) and Winnie Huang enjoy Sci Fri, a teens-only event focusing on global issues (courtesy Ontario Science Centre); girls piece together clues about the health of the Ohio River as part of the spy-themed summer school, Click! (courtesy Girls, Math & Science Partnership, Carnegie Science Center).

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The New Jersey Academy for Aquatic Sciences (the Academy) in Camden is now in the 17th year of its Community and Urban Science Enrichment Program (CAUSE). The program was created to address one of the Academy’s key mission elements: to provide educational and economic opportunity to Camden City residents.

Through the CAUSE program, local high school students receive training in marine science and biology, and work as mentors for younger students and as educators. To date, 150 students have participated in the program. The current demographics of the CAUSE teens are 41 percent African American, 54 percent Hispanic, and 5 percent of mixed backgrounds. By gender, 56 percent are female, and 44 percent are male. The overwhelming majority of participants are from low-income households.

What has become very clear to us over time is that an enrichment program to widen the pipeline to science careers for underrepresented youth is not enough. Building a solid pathway utilizing Positive Youth Development (PYD) strategies will lay the foundation for the journey toward individual success.

Positive Youth Development

The social and economic constraints of minority groups perpetuate educational and employment disparities, particularly when a student’s cultural life is not accounted for in the science education process (Seiler, 2001). Currently, approaches to addressing educational inequities have had little impact on reducing the achievement gap between U.S. minority and majority groups. As such, the number of U.S. middle and high school students from minority backgrounds who pursue science as a viable educational or career goal remains low. Their science experiences are not connected with how they envision their own futures, nor do they provide culturally relevant opportunities to promote their belief in themselves as empowered and capable of achieving (Basu and Barton, 2007; Tang, Pan, and Newmeyer, 2008). Voluntary, community-based programs that use science to build youth empowerment in a culturally relevant manner are needed to address this problem.

PYD theory and practice focus on meeting the cognitive, social, and emotional needs of youth through programs that have the following critical elements:

- Positive relationships with peers and adults
- Safe environments in which to learn and practice healthy behaviors
- Building confidence and competence through challenging and meaningful work
- Fostering voice and leadership opportunities
- Allowing youth to be appreciated and recognized for their assets rather than their deficits.

Museum youth programs have the opportunity to combine all of these elements. Through PYD strategies, learning pursuits become personally relevant, build self-efficacy, and hone interests (Larson, 2000).

Museum programs: More than workshops

There are numerous informal science education programs serving youth facing multiple risk factors in the United States. Many of them provide hands-on, work-based experiences that prepare youth for higher education and the workforce through building knowledge, social competence, confidence, and 21st-century work skills (ASTC, 2001). The body of work that addresses learning science in informal settings continues to grow. Studies generally support youth development programs as having a positive effect on academic outcomes, science interest and attitudes, or college attainment (Barnett, et al., 2006; Cooper, et al., 2002; Ellis, 1993; Lee, Olszewski-Kubilius, and Peternel, 2009; James, 2008; and Fadigan and Hammrich, 2004). The most salient aspects of these program studies have revealed that informal learning settings are supportive environments for authentic science learning, social interactions, and positive relationships with program staff. All of these aspects are fundamental tenets of PYD practice (Shernoff and Vandell, 2008).
Serving the “whole child”

The CAUSE program initially sought to build science engagement and literacy in order to increase the number of under-served youth pursuing science-related fields in higher education. However, we found that in order for the youth to truly find success, we would need to go beyond just exposing them to topics in science. The youth would ultimately need to 1) experience personal growth, self-esteem, and self-confidence; 2) develop life skills, including resiliency and social skills; 3) personally support and value diversity; and 4) have opportunities for leadership.

The Academy felt that our program would have to expand to address each participant’s individual developmental goals in order to meet the needs of the “whole child.” In response, we assembled a team that had a mixture of youth development and counseling expertise, science content knowledge, inquiry-based learning acumen, and career development experience. Most importantly, we insisted upon a 1:10 full-time adult-to-student ratio. This ensured that each teen could have the personal time required for tutoring, mentoring, and counseling.

We then added program elements to the existing framework to permit personal and team growth. For example, we incorporated more frequent feedback to the youth. At the beginning of the year, we worked with each teen individually to codevelop annual goals for both personal and professional growth. We then checked in with them at the mid-program point and also reflected back on their progress at the end of each year. In addition, we added more opportunities for youth to develop leadership skills through youth-driven committees. We also worked to make the program relevant to youth culture by communicating using digital technologies and incorporating peer-produced activities, and to our participants’ ethnic cultures through activities such as diversity awareness workshops.

Ultimately, we had to tackle the multiple external pressures that many of our youth face on a daily basis, as well as their social, cognitive, and emotional developmental needs, to allow successful science engagement to occur. External pressures can be daunting because they are often out of the control of the museum and the youth.

Youth who struggle with difficult home lives find that the Academy environment has supportive staff, safe facilities during times when risky behavior is most likely to occur, and rewarding activities that build self-esteem. We also provide access to caring adults, peers, and community resources to help them navigate challenging situations. For example, our biweekly, teen-driven rap sessions allow young people to discuss troubling issues in their lives, such as abuse and peer pressure, in a nonjudgmental environment.

We also support teens’ academic needs by connecting with teachers and school counselors and by providing tutoring support as needed. Finally, interns are paid for the work that they do.

Many youth are required to contribute to the household income and cannot participate in volunteer programs.

Few museum youth programs have existed as long as the CAUSE program. Solid philosophical foundations, institutional support, program flexibility, and constant fine-tuning of the program have ensured its longevity.

Evaluation: Guideposts for the journey

We embarked on a summative evaluation process in 2007 to discover the long-term impacts of the CAUSE program as both a science enrichment and youth development program. We aimed to discern the effectiveness of the program model and components contributing to the program’s success.

We partnered with the Institute for Learning Innovation to conduct a two-phase study. Phase I focused on the long-term impacts of the CAUSE program. In all, 41 CAUSE alumni and 13 current participants responded to our survey. Findings indicated that the program is highly successful: Both alumni of the program and current participants indicated that the program had affected their views on science and teaching, academic path, career choices and workplace preparedness, community leadership ability, and life choices.

Key findings included:

• Participants spent an average of 3.2 years in CAUSE and demonstrated a deep investment in the program, calling CAUSE a family and a source of support in their lives.
• Alumni of the program were strongly committed to continuing their education: 100 percent of CAUSE seniors have graduated from high school, and 97 percent have undertaken some type of postsecondary education. (This is particularly notable given that all Camden high schools have dropout rates exceeding 50 percent and that CAUSE teens are recruited without regard to school performance.)
• Alumni continued their involvement with science, education, and community service after they left the CAUSE program; 78 percent reported majoring in the sciences or social sciences.
• The program’s greatest reported impacts were on participants’ workplace preparedness. The following workplace skills were rated highly: Work as part of a team, Interact with others in social situations, Engage in public speaking, and Be a responsible employee.
• Aspects of the program related to (continued on page 8)
Finding a Second Family

By Rariety Monford

I first started participating in Cincinnati Museum Center’s Youth Program in 2005 as a shy 13-year-old. Now, five years later, I’m a freshman premedical student majoring in biology at the University of Cincinnati. I’m still in the Youth Program today. The program has developed my confidence and maturity, pushed me to challenge myself, and pointed me toward a career in medicine.

I already had an interest in science when I began the program, and I wanted to explore various scientific disciplines. At Cincinnati Museum Center, I’ve had opportunities to study fields ranging from anatomy to geology to physics. I create new science demonstrations, educate visitors about scientific concepts, identify rocks and fossils that visitors bring in, and train other youth. As I educated people, I started to realize that I already knew a lot about science. It built my confidence and showed me that science is something I’m really good at and that I want to pursue and enjoy as a lifelong career. In particular, my experiences dissecting animals helped me to develop my interest in medicine. There are a lot of people in my family in the medical field, so that influenced me, too.

One of the most valuable things I have gained from the program is maturity. I’ve learned many skills that I will use throughout my life, from customer service skills to the ability to get things done and take work seriously. I had thought high school would be a big party, but my mentors in the Youth Program kept me focused on my schoolwork. They made sure my grades were up to par and they encouraged me to be a well-rounded student and to participate in other activities beyond the Youth Program. Through the program, I was able to prepare for college entrance exams and tour many colleges and universities. The Youth Program staff has high expectations for me and the other youth. It’s like I have two sets of parents—my parent at home, and my parents at Cincinnati Museum Center.

Kristen Kloth, the director of youth programs at Cincinnati Museum Center, has been my biggest mentor and coach. She noticed leadership skills inside me that I didn’t see, and put me into leadership roles. She showed me that I could step outside of my meekness. I’ve always had Ms. Kristen to lean on and talk to about anything that was hurting or upsetting me, from a sudden death in my family to boyfriend issues. She even gave me her cell phone number. Sometimes all I would need was a welcoming ear, someone to listen to me.

The staff and other youth in the program are like family to me. I made lifelong friends through the program; one of them is my current roommate in college. I know I will always have a home at Cincinnati Museum Center, no matter what.

Rariety Monford is a participant in the Cincinnati Museum Center’s Youth Program and a freshman premedical student majoring in biology at the University of Cincinnati, Ohio.

Science centers and museums have used a variety of names for their youth programs and participants over the years.

Compiled by Christina Jones
“Sell here, Sir, what all the world desires to have—POWER.”

Engineer and scientific visionary Matthew Boulton is supposed to have said this to writer James Boswell when he visited the Boulton-Watt steam engine works in Birmingham, England, in 1776.

Perhaps we at Thinktank, Birmingham Science Museum, England, should now mimic him and say:

“We create here, ladies and gentlemen, what all the world desires to have—EMPOWERMENT.”

Thinktank’s Science & Heritage Career Ladder program (SHCL), founded in 2007, brings young people to science, heritage, and, we believe, to empowerment. The SHCL provides summer traineeships to young people ages 16 to 18, who live or study in the neighborhoods in our immediate vicinity in inner-city Birmingham. These Trainee Enablers take on a series of predominantly public-facing roles within the museum’s galleries, assisting visitors of all ages to get the most out of their visits. Their roles include “science busking” (illustrating science ideas to passing visitors), science-themed arts and crafts, and drop-in lab activities. They also interpret Thinktank’s exhibits, which use Birmingham’s extensive historical collections to convey the past, present, and future of world science and technology.

The SHCL aims to empower young people by equipping them with work, business, communication, and interpretation skills. Young people come to respect others and feel respected, have pride in their achievements, and gain confidence in understanding and explaining science. They also increase their interest in careers in science and education. In turn, visitors who interact with Enablers are empowered through increased learning, greater engagement in museum experiences, and the opportunity to connect with someone like them who wants to help them learn. A 25-year-old member of the Enabler team commented, “The younger staff members are great at approaching teenage visitors in the gallery. They use the right language to engage them so naturally.”

**Recruiting from the community**

The SHCL was inspired by a long-running and successful model pioneered at the New York Hall of Science (NYSCI) in the socioeconomically and ethnically diverse borough of Queens. NYSCI’s Science Career Ladder program provides structured training and employment opportunities to local young people, equipping them with new skills and ultimately helping to diversify the museum sector. (See the sidebar on page 7.) Thinktank is based in an area not dissimilar to Queens. The SHCL’s targeted recruitment strategy results in participants reflecting the diversity of the local population. In the local constituency, 67 percent of residents are from minority ethnic groups, with an even higher proportion of young people from these groups.

One of our main recruitment methods involves attending career events for students at local colleges. The recruitment team also meets those responsible for career advice at local schools, colleges, and community youth groups, who then advertise the positions internally. After candidates have completed a tailored application form, we score their skills and experience. Next, we invite approximately 30 young people to selection sessions, where candidates carry out group activities in an informal, enjoyable way, using skills that will be necessary for their role interacting with
the public. Those who display the right combination of skills, attitude, and enthusiasm are selected, and then start their paid summer traineeship a few weeks later with two days of intensive training.

Climbing the ladder

The logo for Thinktank’s Science and Heritage Career Ladder is a “ladder-tree,” the idea being that although there is a clear upward progression, once a certain level is attained, the rungs disappear, leaving the individual equipped with a range of skills to follow whichever branch most interests them.

Those on the first rung of the ladder, Trainee Enablers, receive training in customer service skills, science communication, disability awareness, and care of collections. At the end of the summer, all Trainee Enablers have the chance to apply for part-time, permanent positions as Junior Enablers, the next rung on the ladder. As vacancies become available, Junior Enablers can apply for promotion to the role of Gallery Enabler, with more responsibilities such as storytelling and assisting with science shows, and finally Senior Enabler, which includes a supervisory element.

Although only in its third year, the program has proved to be of national interest. It has set a new challenge for other U.K. museums and science centers to develop similar schemes to match their own social environment and thus to create a new generation that is empowered and engaged. Museums from across the United Kingdom and Europe have contacted Thinktank to learn about the SHCL, resulting in the team speaking at national and international conferences and giving one-to-one advice to those looking to start similar programs.

Nick Winterbotham is CEO of Thinktank, Birmingham Science Museum, England, United Kingdom, and chair of the U.K. Association for Science and Discovery Centres.

The Science Career Ladder Dissemination Project

Founded in 1986, the Science Career Ladder (SCL) at the New York Hall of Science (NYSCI) is steeped in the idea of providing meaningful and purposeful work experiences for high school and college students with pay. (See the January/February 2010 issue of ASTC Dimensions.) Our Explainers interact with the public, interpreting exhibits and leading demonstrations and educational programs. The key guiding principles behind our best practices are providing youth with opportunities to grow within the institution, with high expectations of the students and high levels of responsibility.

In 2005–2006, NYSCI received funding from the Noyce Foundation and the Institute of Museum and Library Services to share best practices with 19 museums internationally, in countries including South Africa, India, and the United Kingdom, through the Science Career Ladder Dissemination Project. A subset of five of those museums elected to develop or improve a youth floor staff program: COSI, Columbus, Ohio; Discovery Science Place, Tyler, Texas; Pacific Science Center, Seattle; Thinktank, Birmingham Science Museum, England, United Kingdom (see the article beginning on page 6); and the Yale Peabody Museum of Natural History, New Haven, Connecticut. In cooperation with Geo Education & Research, each of those sites, plus NYSCI, worked collaboratively to create an institutional logic model for each youth floor staff program and then a cross-institutional logic model. (The Bishop Museum, Honolulu, is also developing a program, but was unable to participate in the network.)

The cross-institutional logic model is a useful heuristic for any site that is interested in developing a youth floor staff program. A successful youth program is grounded in its community, the logic model outlines the community resources that feed and nourish the program. It also presents a three-part model to help young participants (1) develop their job skills, (2) grow as people and members of their communities, and (3) increase their knowledge of science, technology, engineering, and math. The logic model is being finalized and will be shared publicly in mid-2010. In addition, the six organizations are using a program development and assessment guide to document activity, successes, and challenges, and to create a plan for improvement.

Preeti Gupta is senior vice president for education and family programs at the New York Hall of Science, Queens. To learn more about the Science Career Ladder and its dissemination project and logic model, contact her at 718/699-0005 x349, or via e-mail at pgupta@nysci.org.
(continued from page 4)

respecting diversity were the next highest rated. The program cultivated a culturally diverse environment, and participants highly valued the lessons they learned from this diversity.

- Participants attributed to the program a greater knowledge of their personal strengths and weaknesses, as well as a willingness to accept responsibility.
- The CAUSE program positively impacted participants’ ability to continue their education by providing support for making education-related decisions and encouraging participants who did not think college was an option to pursue postsecondary education.
- The program positively impacted participants’ awareness of careers and confidence in choosing a career.
- The CAUSE program introduced participants to careers in science and teaching. The program also was a factor in participants’ awareness and appreciation of science generally.
- Participants felt grateful for the mentoring they had received in the program, and desired to mentor others as a result.

Phase II specifically focused on the nature of the CAUSE program model. Using a case study design, the program model, values, and activities were investigated and described. The program was then compared to an existing framework from the PYD field, outlined by Milbrey McLaughlin in Community Counts (2000).

Using McLaughlin’s aspects of successful youth development (i.e., youth-centered, knowledge-centered, assessment-centered, and community-centered), we found the CAUSE program to be closely aligned with this empirically based framework. It was apparent that the CAUSE model is largely effective, closely resembling a successful youth development program and achieving youth development.

Key findings were:
- The staff values an asset-based, “whole-child” approach to mentoring and supporting youth’s diverse needs.
- Knowledge-centered aspects of CAUSE are reflected in the college-level marine biology instruction and knowledge that underpin the program.
- Assessment-centered aspects are regularly incorporated at the program, staff, and youth levels. These include workshop evaluations, staff-student goal setting, youth journals, and teaching observation rubrics.
- The community-centeredness of CAUSE is evident in the safe environment founded on family-like relationships within the program.

What we, and other youth development programs, have found is that the ensuing confidence and capacity the youth acquire truly leads to success in science, but more importantly, in life.

Angela Wenger is executive vice president and chief operating officer at the New Jersey Academy for Aquatic Sciences, Camden, and chair of the Mid-Atlantic YouthALIVE! (Youth Achievement through Learning, Involvement, Volunteering, and Employment) Network. Susan Foutz is research associate at the Institute for Learning Innovation, Edgewater, Maryland.

References


Think Globally, Play Locally:
Bringing Social and Global Issues to Teens

By Karen Hager

Do you remember when you were 15 years old? Who was your favorite teacher? Did you have a job? What was on your bedroom wall? What did you do for fun? Were you involved in your community? What were the social issues that mattered to you?

Today’s teens would probably answer these questions very differently from how you or I would. Technology, world issues, lifestyle, economic forces—all have shaped their world to look quite different from what you and I remember. As professionals in the science museum industry, we at the Ontario Science Centre, Toronto, Canada, have been trying for many years to reach teens and to engage them in meaningful programs.

How do we begin to program for this audience when we’re not 15 anymore? The answer? Go to the audience and ask them to tell us. With input from our youth advisory council, we have developed Sci Fri (www.ontariosciencecentre.ca/scifri). On the last Friday of almost every month, teens ages 14 to 19 have exclusive access to the Ontario Science Centre’s Weston Family Innovation Centre, where they participate in activities centered around global or social issues related to science and technology.

More and more teens are looking for ways to make a difference in the world. Groups that empower young people to tackle global issues—such as our content partner organizations TakingITGlobal (www.tigweb.org) and Free The Children (www.freethechildren.com)—report that their memberships are growing daily. By joining science and social issues together in a forum targeted to youth audiences, we feel we are providing the tools teens need to become and remain engaged in both social action and in our program. Our focus on social issues, in turn, helps us to meet Sci Fri’s three-fold purpose and intent:

• to encourage today’s youth to develop the tools, attitudes, and behaviors to be innovative
• to create, prototype, and produce experiences that will appeal to the youth audience
• to develop a presence in the minds of youth of the Ontario Science Centre as an interesting, social destination with a twist.

We started developing Sci Fri in 2007 using a partnership model for content and promotion. Joining forces with TakingITGlobal and Free The Children has enabled us to develop topical programs of interest to this age group and to find potential speakers and content providers. To date, Sci Fri has covered topics including climate change, HIV/AIDS, religion and science, and endangered species.

Next came the process of actively engaging youth through our youth advisory council. Teens who attended Sci Fri were encouraged to participate in monthly meetings to help us frame future programs. As soon as this group was established, new ideas, topics, and content started to flourish. The advisory council also solidified our suspicions regarding promotion—yes, Facebook and other social media are key tools.

Sci Fri follows a peer-to-peer model,
In 2007, the National Museum of Science and Technology Leonardo da Vinci in Milan, Italy, created the School Science Society (SSS) project along with local secondary schools, after some teachers called our attention to a disconnect between their students' academic knowledge and its applications in the real world. Students participating in the SSS project choose a scientific news topic and investigate it through lab activities, discussions with experts (including scientists, teachers, museum staff, and relatives), reviews of literature, and original scientific research. As the final output, students produce an experiment to investigate the news topic, and then communicate their findings to teachers, peers, and scientists in the museum.

The SSS project aims to stimulate the interest of teenagers in science and to help them see science as relevant. By participating in the project, students come to understand science as an active process of experimentation, rather than something to read about in a book. They gain experience in science communication and information processing—skills that are among the tools that all citizens need to take an active part in society.

The audience

Teenagers are a very tough public for museums, as they are not children and not yet completely adults. Because they are the future generation of adults, it is very important for museums to find the proper language to communicate with them. The SSS project represents the first time our museum has worked directly with students, rather than relying on teachers as intermediaries. This approach was successful; the students demonstrated more interest and involvement than in other projects.

The SSS project's original target audience was 15-year-olds. Since 2009, we have extended the project to 10-year-olds as well, thanks to support from Science Education as a Tool for Active Citizenship (SETAC), a project funded by the European Commission. So far, three classes of 15-year-olds (70 students) and three classes of 10-year-olds (60 students) have participated in SSS. Students work in groups, and each group works on the project for a total of two years.

Getting to work

The SSS project begins with two presentations by the museum staff: one to teachers, and one to students. Next, the students meet five times with museum staff—twice in the museum and three times at school—to discuss their topics and conduct their experiments. The structure is quite flexible, but students work on their projects for a total of at least eight hours in the museum and eight in class during the school year.

Students begin by choosing their topics and designing their experiments. We chose very broad topics to give students a personal choice: biotechnology, energy, and health. Designing the actual experiment is one of the most difficult parts of the project. The kinds of experiments done at school are typically guided closely by the teachers and deal with executing fixed actions. Even to connect a scientific news topic with an experiment is not an easy task, so the museum staff supports the students in this phase through discussion, tools, and materials. (The museum takes a more active role in directing the program for the 10-year-olds; the topics and the students' personal choices are more limited.)

One of the experiments produced by the upper secondary school students was inspired by a news topic about the production of artificial life in an Italian lab. The students focused on the question, “What is a cell?” and identified the membrane as a key part. In collaboration with researchers from the University of Milan and the museum staff, they prepared liposomes, whose membranes are made from the same material as cell membranes. By chance, the researcher who authored the study gave a lecture for the public at the museum about his new book on the importance of biotechnology. The students attended the lecture and asked him some questions about their experiment. Since that lecture, the group of students joined all the lectures offered by the museum, even those not dealing with their topic. They also started to bring some friends with them to the lectures. In my opinion, this is one of the main results we achieved: seven teenagers attending scientists’ lectures in a museum and forcing reluctant friends to join them. The museum became a reliable and friendly place to meet experts and learn about scientific fields.

Making an impact

From our interviews with students, we

(continued on page 14)
This effort begins with the online community BrainCake.org. The web site first focuses on girls as girls, not only on girls who self-identify as “loving science and math.” If we only court the girls who still love science by middle school, we won’t actively change the dynamic of who pursues training and careers in science. At least one-quarter of our audience on BrainCake.org tells us that they “don’t know if science is for them.” This is where change can happen. So far, our efforts to keep the web site’s design and tone “all girl”–friendly—primarily through appealing illustrations, customizable components, and myriad ways to hear from real women in STEM—have been successful. In 2009, BrainCake.org engaged members from every U.S. state and 66 countries, generated more than 375,000 unique visits, and received ASTC’s Roy L. Shafer Leading Edge Award, making it the first web site to do so. The site’s users represent a far more diverse audience than most web sites: 24 percent are African American girls as architects of change.

A program of Carnegie Science Center, Pittsburgh, GMSP strengthens girls’ identity by helping them define themselves as bright and curious problem solvers, team players, and risk takers. Our online and in-person programs focus on using out-of-school time to provide innovative opportunities for girls ages 10 to 17 not only to connect with science, but also to be captivated by it.

Preteen and teen girls in the United States today have more options than ever about who and what they can become. Title IX leveled the playing field for girls in sports, nearly tripling the number of college women athletes since 1972, according to the National Collegiate Athletic Association. Women explore space, lead Fortune 500 companies and prestigious universities, and operate at the highest levels of government. Real-life heroines exist for girls in almost every corner of society.

Yet the messages these girls receive about their prospects in science, technology, engineering, and math (STEM) careers shape them so profoundly that the statistics still don’t fail to startle. In the past decade, the number of U.S. women pursuing undergraduate degrees in computer science has declined by 79 percent, according to the National Center for Women & Information Technology. Women make up only 20 percent of U.S. undergraduates in all engineering fields, according to the Society of Women Engineers. What’s the key to achieving gender parity in STEM fields? The solution might be complicated, but the place to start seems to be girls’ identity.

The Girls, Math & Science Partnership (GMSP) engages, educates, and embraces girls as architects of change. A program of Carnegie Science Center, Pittsburgh, GMSP strengthens girls’ identity by helping them define themselves as bright and curious problem solvers, team players, and risk takers. Our online and in-person programs focus on using out-of-school time to provide innovative opportunities for girls ages 10 to 17 not only to connect with science, but also to be captivated by it.

“[My daughter] had such a high degree of comfort in her sixth and seventh grade science classes because of the familiarity of the material that she had already explored in [the GMSP program] Click! This brought a confidence and smile to her face (‘Mom, I already know this… I did this in Click!’)”

“These programs have helped to keep [my daughter] interested in math and science... She went from being an indifferent student in these areas to one who worked hard in eighth grade in order to qualify for honors classes in high school.”
proven opportunities for underrepresented groups in STEM, including women (STEM) education. One of three key target areas of the initiative is financial and in-kind support to improve science, technology, engineering, and math (STEM) education. Girls participating in Click!, the Girls, Math & Science Partnership’s spy-themed summer school, rewire circuitry to change the sounds toys make, in “The Case of the Do-it-Yourself DJ.” Photo courtesy GMSP staff

American, 11 percent are Hispanic, and 9 percent are identified as “other” (nonwhite). These statistics represent more than 3, 1.5, and 6.6 times the average online usage of these groups, respectively, according to 2009 statistics from Quantcast.net.

Girls can participate in the web site by posting in online discussion forums, seeking homework help, finding STEM programs in their area, exploring biographies of female STEM professionals, or matching with a mentor. These last two activities, which represent our continuing effort to showcase interesting women who use STEM to make a difference in the world, are gaining traction; the number of page views spent exploring mentors has tripled in less than 18 months. By connecting girls through profiles, audio podcasts, or video interviews, girls can gain insight into the day-to-day lives of positive role models in STEM.

Research suggests that the combination of online and in-person interaction with women mentors evokes the strongest interest level for girls in STEM careers. GMSP has worked with other organizations, like Engineer Your Life and Dragonfly TV, to cross-reference the women profiled on BrainCake.org with other online mentor databases. While this is not enough to fully counteract the scarcity of STEM role models for girls, it represents a clear starting point.

Can*TEEN

GMSP infused its new career exploration toolkit with the idea that identity is central to encouraging girls in STEM. Can*TEEN: A kit for the girl who wants to change the world is a fun, inspiring, and useful tool that helps girls navigate through all four STEM disciplines. Resource CDs for each discipline include activities, downloadable games or tools, recommended mentors and class schedules, and scholarship opportunities.

Girls are guided through each STEM discipline by eight virtual hosts—avatars based in part on Howard Gardner’s theory of multiple intelligences, each with her own unique personality, interests, and talents. For example, Samara’s naturalistic intelligence helps her reduce her carbon footprint and fight global warming, while Sawyer’s bodily-kinesthetic intelligence inspires her to program better soccer plays for her coach using her Nintendo Wii gaming system. Diverse perspectives, styles, and ethnicities are represented.

The avatars play two important roles. First, girls can see themselves in these characters— aspirational “near-peer” role models with loosely defined interests and characteristics. Second, the avatars embrace one of GMSP’s primary assumptions—that girls are better able to understand and connect to science if they sense its broader value. Each character combines her talents and STEM tools to make a difference in the world. A 2006 University of Texas–Austin study found that seeing science as a way to help people was one of the strongest predictors of girls’ interest in a STEM profession.

As we develop our programs, we always pair robust science content with a focus on identity and altruism. Beyond BrainCake.org and Can*TEEN, GMSP engages in a variety of programs. Click! is a spy-themed summer school for girls in 6th to 8th grades. GirlTalk Radio allows girls to create, engineer, and edit a podcast series heard by 640,000 listeners a season. The Girl Solution equips educators with new methods and best practices for engaging girls’ interest in STEM careers.

GMSP’s programs encourage girls to define themselves first, with confidence. But where are girls when they feel that confidence? At the river bank conducting water-quality testing, in a sound studio creating a podcast, at the computer developing an online video game, at the workbench re-engineering the sound toys make, or in the halls of Pittsburgh’s top companies and research facilities.

For the past several years, GMSP has

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The Girls RISE (Raising Interest in Science and Engineering) Museum Network (Girls RISEnet) is a newly launched, U.S. national project whose goal is to increase the capacity of informal science educators to attract and support girls from minority backgrounds, grades 6–12, in science, technology, engineering, and math (STEM) studies and careers.

According to the Society of Women Engineers, women represent just 20 percent of U.S. students earning engineering bachelor’s degrees, with African-American and Hispanic women mirroring this percentage within their own demographics. Research indicates that the primary contributing factors to this gap are the conflict between traditional science pedagogy and the students’ diverse cultural worldviews and ways of knowing, the lack of female STEM professional role models and mentors, and girls’ limited understanding of STEM careers and real-world applications of science. 

The vision of Girls RISEnet is to leverage the strengths of science centers and museums—with their audience-centered and experiential approach to science education—to address these barriers and close the STEM achievement gap. Through a coordinated network of 10 regional lead science centers, informal science educators across the United States will have the opportunity to attend professional development workshops based on research on best practices for engaging teen girls from minority backgrounds in STEM, and join an online community to share impacts and promising practices. Regional lead institutions are Connecticut Science Center, Hartford; New York Hall of Science, Queens; Maryland Science Center, Baltimore; Miami Science Museum, Florida; COSI, Columbus, Ohio; Saint Louis Science Center, Missouri; Louisville Science Center, Kentucky; Sci-Port: Louisiana’s Science Center, Shreveport; Explora, Albuquerque, New Mexico; Oregon Museum of Science and Industry, Portland; and California Academy of Sciences, San Francisco.

Launched in 2009 in support from the U.S. National Science Foundation, Girls RISEnet is a partnership between the Miami Science Museum; SECME, Inc.; and ASTC. For more information, contact Judy Brown, principal investigator, jabrown@miamisci.org, or Cheryl Lani Juarez, project director, cjuares@miamisci.org.


Karen Hager is associate director of events and public programs at the Ontario Science Centre, Toronto, Canada.
Engaging America’s Youth

By Judy Koke and Lynn D. Dierking

The U.S. Institute for Museum and Library Services (IMLS) commissioned a national study in 2007 of 300 museum and library programs serving youth ages 9 to 19. The purpose of the research was (1) to document what funding had achieved in terms of audiences and communities served and program outcomes, and (2) to build on the research by developing representative case studies and facilitating an expert panel of youth-focused professionals to articulate effective practices that could shape future youth programs nationally.

Methods included an extensive survey framed within youth development research, case studies reflecting communities nationwide and diverse programs, and follow-up interviews with project leaders, partners, and when possible, participants. The expert panel was convened twice with project representatives to discuss effective practice.

Findings underscore the many benefits of youth programs. Youth learn life/work skills, develop relationships with positive role models, and become more connected to community. Community benefits include engaged youth who become contributing citizens. Institutions frequently gain underrepresented audiences and build community relevance.

The most effective programs integrate Positive Youth Development research and practice (see the article beginning on page 3), support staff with specialized training, and involve youth in all phases of programs from design and development to evaluation. (As one youth panelist said, “Remember who you are as an organization and what you do best; then invite youth in to shape programs.”) Sustainability is accomplished by using evaluation, forming community partnerships, and building awareness of program impacts—for youth, families, and broader communities.

To view the full report, visit www.imls.gov/pdf/youthreport.pdf. To read the practitioner’s guide based on the report’s findings, visit www.imls.gov/pdf/YouthGuide.pdf.

Judy Koke is deputy director of education and public programming at the Art Gallery of Ontario, Toronto, Canada. Lynn D. Dierking is Sea Grant professor in free-choice learning in the College of Science, Oregon State University, Corvallis.

Sara Calcagnini is chief of the Science in Society Unit within the Education Department at the National Museum of Science and Technology Leonardo da Vinci, Milan, Italy.
Building Bridges to Technology: SAASTA’s Techno Youth Program

By Bafedile Kgwadi

Techno Youth is an outreach program of the South African Agency for Science and Technology Advancement (SAASTA, www.saasta.ac.za), Pretoria, the unit of the National Research Foundation responsible for promoting public awareness of and engagement with science, engineering, and technology. Founded in 1996, Techno Youth introduces technology to learners in grades 6 to 9 (i.e., from 10 to 15 years old) from disadvantaged townships near Pretoria and Johannesburg. So far, more than 1,700 learners have participated.

The program falls under the Science Awareness Platform, one of SAASTA’s three interdependent strategic pillars. (The others are Education and Science Communication.) The Science Awareness Platform aims to increase participation of schools in science and technology awareness and to motivate learners to pursue science careers by identifying and nurturing their talents. Informal science education programs like Techno Youth can help achieve these goals by emphasizing the social value of science careers.

Goals and objectives

The main objective of Techno Youth is to introduce youth to technology in an informal, friendly, and fun manner. We intend to instill in them technological skills they might use in the future, while encouraging their interest in, appreciation of, and excellence in science and technology.

Techno Youth further aims to teach participants that sooner or later, they will encounter many forms of technology, especially when they join the job market. It is our objective to introduce technology to these youth—who may otherwise not be exposed to modern technology—at an early age. A secondary objective is to make them aware of rewarding career opportunities that will exist for them if they opt for science and technology subjects at school.

Nuts and bolts

The program is conducted at SAASTA Johannesburg Observatory during school holidays—March, June/July, September, and November/December—over three days, for 30 to 60 learners. Transportation and light lunches are provided.

Participants are introduced to technology through audiovisual presentations and a set of hand-outs, which they get to keep to reinforce their learning and encourage further interest. They are introduced to basic hand tools and different materials (some as simple as cardboard) and shown how to apply these in a practical way. They then select and construct technology projects like telescopes and bridges using special kits. These hands-on sessions are interspersed with video shows, guided tours through the observatory, and science demonstrations.

We also involve the learners in discussions regarding technology at large, its processes and impacts, and scientific concepts involved in their projects. The complete use of computers by learners is still not fully administered.

Evaluation

Learners are provided with pre- and postevaluation forms, which we sometimes supplement with oral interviews. The evaluations help us to determine the participants’ awareness of technology, their interest in science and technology careers, and technology’s impacts in their own lives.

Some youth have told us that they did not originally intend to pursue studies or careers in science, but the program brought their interest in science to the surface. In addition, learners become encouraged and motivated and show improvement in their behavior. This has led some schools to ask to participate in the program. Usually, an organizing team from SAASTA selects the participating schools, so these requests are something we never expected, but greatly appreciate.

The Techno Youth program has had an inspiring response from learners and teachers alike. It is our wish that the program will have long-lasting impacts, making learners proud, literate, and influential citizens.

Bafedile Kgwadi is science and technology programs coordinator at the South African Agency for Science and Technology Advancement (SAASTA), Pretoria. She organized and ran the Techno Youth program from 2004 to 2007 and continues to serve as the program’s coordinator.

Thembi Mdlalose, SAASTA’s educational officer and current organizer for Techno Youth, assisted with writing this article.
Welcome to ASTC

The following new members were approved by the ASTC Board in September 2009. Contact information is available in the About ASTC section of the ASTC web site, www.astc.org.

SCIENCE CENTER AND MUSEUM MEMBERS
- Four Corners School of Outdoor Education, Monticello, Utah. Back as an ASTC member after a two-year hiatus, this organization plans to open the Canyon Country Discoveror and the 14,000-square-foot facility with exhibitions related to the ecology and cultural resources of the Colorado Plateau, in 2012.
- Insights El Paso Science Museum, El Paso, Texas. This museum, which had its start in the basement of the El Paso Electric Company building, celebrated its 30-year anniversary in February. Visitors can roam 20,000 square feet of exhibition space devoted to electricity, solar power, motion, and the human body, and also tour an off-site location with dinosaur tracks.
- Haus der Musik, Vienna, Austria. Located in the former palace of Archduke Charles, the House of Music was also the residence of Otto Nicolai, who founded the Vienna Philharmonic. The 50,000-square-foot museum first opened to the public in June 2000. Popular sound-related exhibits include the virtual conductor and the Brain Opera, where visitors create musical tones and moods through their movements, touch, and voices.
- Math Factory, Inc., Setauket, New York. This group, led by a former hedge fund analyst, has plans to open a 30,000-square-foot math museum in late 2011. The Factory’s Math Midway debuted at the 2009 World Science Festival in New York City, with more than 20 interactive exhibits.

SUSTAINING MEMBERS
- Beijing Science & Technology Exchange Center with Foreign Countries, China
- Exhibit Consortium, LLC, Marietta, Georgia
- Expografic S.L., Barcelona, Spain
- Prime Play by WhiteWater, Delta, British Columbia, Canada

ASTC at COP15

In December 2009, ASTC joined 937 other nongovernmental organizations (NGOs) from around the world in Copenhagen, Denmark, for the United Nations Climate Change Conference (COP15). This gathering was an opportunity for NGOs tackling climate change issues to network, share best practices, and be inspired by the work of others.

In addition to a 200-booth exhibition, the conference featured hundreds of side events focusing on issues ranging from how climate change affects women, to clean development mechanisms in developing countries.

One of these side events was an International Clim’Way Competition organized by ASTC and the U.S. National Oceanic and Atmospheric Administration (NOAA). ASTC brought together youth and educators from the Museum of Science, Boston; Experimentarium, Copenhagen; Cap-Sciences, Bordeaux, France; and COSI, Columbus, Ohio, to share their experiences playing Clim’Way (http://climcity.cap-sciences.net/us/), a free, online climate change game designed by Cap-Sciences.

The science center participants discussed what they learned from the game with a panel of climate science and policy experts that included Jean-Pascal van Ypersele, Intergovernmental Panel on Climate Change; Walter Stavelo, ASTC; Ned Gardiner, NOAA; Eric Gorman, Cap-Sciences; David Noble, 2DegreesC; Bjørn Bedsted, Danish Board of Technology; and Hans Gubbels, Ecsite Executive Committee.

Perspectives on the game and on climate change differed from site to site, but all participants agreed on one thing: Finding a solution to climate change, though difficult, is a challenge we must meet.

Noyce Leadership Institute

The Noyce Foundation and ASTC are pleased to announce that the Noyce Leadership Fellows (NLF), a year-long program of the Noyce Leadership Institute (NLI), will be offered for the fourth consecutive year in 2011–2012. As in 2010–2011, the 2011–2012 cohort will be open primarily for senior managers at science centers and children’s museums who aspire to significant leadership roles in their institutions and communities. Application details will be available in late 2010. Prospective applicants are encouraged to contact Sheila Grinell, NLI field liaison, at sheilagrinell@cox.net, or Jennifer Zoffel, NLI program administrator, at jzoffel@gmail.com, for more information.

Members of the 2010–2011 cohort group were notified of their acceptance in early February and will attend an opening retreat May 18–23 to begin the program.

In addition to the Noyce Foundation, funders of the Noyce Leadership Institute include the Institute of Museum and Library Services, the Gordon and Betty Moore Foundation, and the David and Lucile Packard Foundation. To learn more, visit www.noycefdn.org/NLIprgmdescription.php.

Exhibitions on Tour

The 4,000-square-foot exhibition Wild Music: Sounds & Songs of Life opened in February at Exploration Place, Wichita, Kansas—the latest stop on its U.S. national tour. Wild Music, which explores evidence for the biological origins of music, was a partnership among the Science Museum of Minnesota in St. Paul, ASTC, and the University of North Carolina at Greensboro School of Music. The exhibition’s next stops include the Cleveland Natural History Museum, Ohio, and the National Geographic Museum, Washington, D.C.

Black Holes: Space Warps and Time Twists continues its U.S. national tour, after opening at the Springfield Science Museum, Massachusetts, in February. This 2,500-square-foot exhibition immerses visitors in the modern search for black holes through a variety
of interactive and multimedia experiences. Yale Peabody Museum of Natural History, New Haven, Connecticut, will host *Black Holes* in October. Created by the Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts, *Black Holes* is managed by ASTC.

*Giant Worlds: A Voyage to the Outer Solar System* highlights the most recent discoveries on the origins of solar systems, formation of stars and planets, and conditions necessary for life. This 3,500-square-foot exhibition opened in February at Insights El Paso Science Museum, Texas, and has openings later this year. *Giant Worlds* was developed by the Space Science Institute, Boulder, Colorado, and is managed by ASTC.

For more information or to book any of these exhibitions, visit [www.astc.org/exhibitions](http://www.astc.org/exhibitions), or contact Wendy Hancock, 202/783-7200 x117.

### New Governing Members Approved

The ASTC Board of Directors approved several new Governing Members in September and October 2009. Located on the National Museum Mall in Jerusalem, Israel, the Bloomfield Science Museum hosts more than 200,000 visitors a year, has 30,000 square feet of exhibition space, and works to bridge the gap between science and society. With five full-time staff and a $700,000 budget, the Children’s Museum of Science and Technology, Troy, New York, operates a 12,000-square-foot building and serves more than 60,000 visitors each year. According to its mission, the Don Harrington Discovery Center and Space Theater, Amarillo, Texas, “makes science exciting, relevant, and interesting to all types of learners by providing interactive exhibits and programs that actively engage children, adolescents, and their families.” The center maintains 40,000 square feet of exhibition space. Last, the Life Science Centre, Newcastle Upon Tyne, Tyne and Wear, England, United Kingdom, hosts more than 270,000 visitors a year and includes 20,000 square feet of permanent exhibition space. Its annual Newcastle Science Festival serves approximately 50,000 participants each year.

### Calendar

**MARCH**

- **10–11** Global Marathon For, By, and About Women in Engineering and Technology. “Launching Tomorrow.” Details: [www.eweek.org/EngineersWeek/GlobalMarathon.aspx](http://www.eweek.org/EngineersWeek/GlobalMarathon.aspx)
- **27–29** NanoDays. Details: [www.nisenet.org/nanodays](http://www.nisenet.org/nanodays)

**APRIL**

- **17–19** Museums Store Association Retail Conference and Expo. Austin, Texas. Details: [http://museumstoreassociation.org/ConfExpo/expo.cfm](http://museumstoreassociation.org/ConfExpo/expo.cfm)

**JUNE**

- **3–5** Ecsite Annual Conference 2010. Hosted by DASA, Dortmund, Germany. Details: [www.ecsite.eu](http://www.ecsite.eu)

**OCTOBER**

- **2–5** 2010 ASTC Annual Conference. “Ho’okele—To Navigate: Science Centers as Wayfinders to New Horizons.” Hosted by the Bishop Museum, Honolulu. Details: [www.astc.org/conference](http://www.astc.org/conference)
THE RIPPLE EFFECT—“To build awareness throughout the Americas of North and South American continents.
www.aroundtheamericas.org

Aboard was an educator representing project principal Pacific Science Center, Seattle, along with a sailing team, staff from the nonprofit environmental group Sailors for the Sea, and a scientist belonging to a six-institution team. Over a 13-month voyage, the team is connecting with visitors at 31 ports and sharing research discoveries via the project web site, www.aroundtheamericas.org. During the port visits, Pacific Science Center’s onboard educator conducts hands-on activities related to ocean health. The educator connects port visitors with the rest of the team and provides tours of the vessel.

The science center’s publications Around the Americas K–8 Teacher’s Guide and Around the Americas Informal Educator’s Toolkit extend the project’s impact into the classroom and into museums and after-school programs, respectively. Posted in full on the project’s web site, these publications complement the real-time images and crew log entries.

The Ocean Watch collects “datasets of opportunity” in areas ranging from polar science to weather to jellyfish populations. For example, while in the Arctic, the crew retrieved data from buoys that measure air pressure and surface temperature. Often lost due to harsh conditions, these buoys allow scientists to render effective weather and sea ice forecasts.

The Ocean Watch is due to complete its voyage and return to Seattle at the end of June.

Details: Wendy Malloy, media and public relations manager, wendy_malloy@pacsci.org, 206/443-2879

THE MUMMIES’ TALE—On October 10, 2009, The Accidental Mummies of Guanajuato opened at the Detroit Science Center in Michigan. The exhibition marks the first time these mummies have been displayed outside of Mexico.

The exhibition marks the first time these mummies have been displayed outside of Mexico.

In 1865, in the town of Guanajuato in Mexico’s central highlands, town officials were exhuminig the body of Remigio Leroy, a French doctor. Instead of finding a decomposed corpse, the officials found Leroy’s body in mumified form. Like more than 100 other “accidental mummies” since found in this dry Mexican city, Leroy’s body had mumified naturally before decomposition could set in.

Once ordinary citizens—many of them miners—these mummies “speak” of their lives and times. For example, forensic examinations of the mummy of “La Bruja” (“The Witch”) reveal that she suffered from a fractured hip and chronic pain. She evidently sought comfort in a small medicinal pouch found near her mumified remains.

The exhibition provides visitors with interactive tools to help them interpret such clues, in exhibits including How to Read a Mummy and The Diagnostic Toolbox.

The 10,000-square-foot exhibition recreates Guanajuato’s local cemetery and town marketplace. In October 2009, the museum welcomed guests to a celebration of el Día de los Muertos (Day of the Dead), a Mexican holiday for remembering and celebrating the lives of loved ones who have died.

The Detroit Science Center and Accidental Mummies Touring Company LLC reached a historic agreement with Manuel Hernandez/Firma Culturato to produce a traveling exhibition featuring 36 mummies from the Museo de las Momias de Guanajuato. The $2 million exhibition was produced by Ekstein’s Workshop, LLC, a wholly owned subsidiary of the Detroit Science Center, in association with Accidental Mummies Touring Company LLC. The exhibition is an official event of the Mexico 2010 Bicentennial celebration.

After April 11, the exhibition will travel to six other North American cities through 2012.

Details: Kelly Fulford, vice president of sales and marketing, kfulford@sciedetroit.org, 313/577-8400 x430

SCIENCE MUSEUM, TEXAS

STYLE—Fort Worth, Texas, boasts a new jewel in the crown of its cultural district. The 166,000-square-foot, $80 million building serves as the new home for the Fort Worth Museum of Science and History. The new facility opened November 20, 2009.

The museum has been a Fort Worth landmark for nearly 70 years. In 2003, in consultation with museum planners Lord Cultural Resources, the museum commissioned a new facility that would hold its own in a cultural district studied with architectural showpieces, such as the Amon Carter Museum, the Kimbell Art Museum, and the Modern Art Museum of Fort Worth. The finished product, designed by father-son architectural team Ricardo Legorreta and Victor Legorreta of Mexico City, projects Texan and Mexican architectural influences.

Inside, visitors to the museum’s popular Energy Blast exhibition enter through a prehistoric undersea environment designed to evoke Fort Worth 300 million years ago, and later feel the vibrations from a real 50,000-pound seismic vibroseis truck. Geolo-
gists use the seismic data from such trucks to help pinpoint where gas deposits are located.

Other museum experiences dedicated to the area’s history and culture include the Cattle Raisers Museum. Previously a freestanding Fort Worth institution for 25 years, the museum is a joint venture with the Southwestern Cattle Raisers Foundation. This museum-within-a-museum affords an appreciation of the cattle industry with features such as a “ride” on an interactive horse via computer screen.

In addition, the indoor-outdoor Fort Worth Children’s Museum fosters learning through play for children from birth to age eight.

The Fort Worth based firm Gideon Toal served as the project’s architect of record. Other members of the design, construction, and exhibit design team included ASTC members Chick Russell Communications, Design Island Associates, Design and Production Incorporated, and Roto Studio.

Details: Becky E. Adamietz, director of public affairs, badamietz@fwms.org, 817/255-9411

A FIRST IN MACAO—The I.M. Pei–designed Macao Science Center provides Macao with its first science center and a platform for scientific and technological exchange. Planners scheduled the opening ceremony of the new science center for December 19, 2009, nearly 10 years to the day after the former Portuguese colony became one of China’s two special administrative regions. (The other is Hong Kong.) Edmund Ho Hau Wáh, Macao’s chief executive, conceived of the science center in 2002 as a way of expanding youth education. Under the leadership of the Macao Foundation, the $96.5 million center has emerged as a destination for education, tourism, and conferences. The 288,000-square-foot complex includes an exhibition center (62,000 square feet), digital dome planetarium (6,000 square feet), and convention center (9,130 square feet).

Fourteen exhibition galleries comprise 450 exhibits and reflect four themes: Children, Environment, Lifestyle, and Technology. In the Science Express Gallery—one of the exhibitions geared specifically to children—young guests can board a child-sized train to visit scientists and see their work. In the galleries focusing on Environment, visitors can immerse themselves in Earth science, meteorology, and conservation. In Lifestyle, guests can test their sporting skills and learn about the importance of nutrition. In the Science Exploration Gallery—part of the Technology section—local residents and international visitors alike can learn about Macao’s role, in its early history, as a crossroads for introducing Western knowledge into China and for disseminating Eastern knowledge to the West. The gallery spotlights the influence that a book about Chinese medicine, likely transferred via Macao, may have had on Charles Darwin.

Center staff intends to keep developing exhibits that reflect cooperation among international experts, from the Chinese-Japanese joint venture company behind the space science exhibition to the Dutch firm responsible for the environmental-sciences display.

Details: Bonnie Fung, education and publicity coordinator, bonniefung@org.mo

The Macao Science Center’s exhibition center features 14 galleries. Photo courtesy Macao Science Center

The Gordon and Betty Moore Foundation awarded $300,000 to Chabot Space & Science Center, Oakland, California, to support the fabrication and installation of Bill Nye’s Climate Laboratory.

Madison Children’s Museum, Wisconsin, received a $250,000 challenge grant from the U.S. National Endowment for the Humanities for the Ready, Set…Grow! Capital Campaign to support the museum’s new facility, scheduled to open in August.

The Science Museum of Minnesota, St. Paul, was awarded a 2009 Gulf Guardian Award (first place in education) from the U.S. Environmental Protection Agency for their water quality research and efforts to educate the public on impacts of human behavior on the Mississippi River. Gulf Guardian Awards recognize people and organizations that take positive actions to benefit the Gulf of Mexico.

Two ASTC members were among the 12 recipients of the Themed Entertainment Association’s 16th annual Thea Awards:

• Liberty Science Center, Jersey City, New Jersey: Thea Award for Outstanding Achievement for Skyscraper!, an exhibition designed to educate visitors about the complexity of skyscraper design and construction

• Museum of Science and Industry, Chicago: Thea Classic Award for The Coal Mine, an exhibition that takes visitors on a simulated excursion 600 feet below the surface, open daily since 1933.
On January 15, Tuan Chiong Chew left Science Centre Singapore and the science center/museum field to join the private sector. Since Chew’s tenure as CEO began in 1995, Science Centre Singapore’s attendance has more than doubled to over 1 million attendees per year, as a result of a series of new programs and exhibitions. He also built up significant reserves through annual surpluses and raised the center’s independently determined visitor experience index. In addition, Chew helped to found the Asia Pacific Network of Science & Technology Centres (ASPAC) and served as its president for four years. An active member of the ASTC Board (2005–2010), Chew served on the executive committee as vice president (2008–2009) and was a valuable contributor to ASTC’s strategic planning and operations. Chew is replaced by Lim Tit Meng, formerly Science Centre Singapore’s assistant chief executive. Lim expanded the center’s science education programs, focusing on students, teachers, and schools. Previously, Lim was the vice dean of the National University of Singapore, and his current research is on Parkinson’s disease and Acute Myeloid Leukemia.

The New York Hall of Science (NYSCI), Queens, has welcomed Martin Duus as vice president of institutional advancement. Duus, formerly director of strategy and development at Eyebeam Art & Technology Center, New York City, brings many years of experience in development, strategic planning, and fund-raising to NYSCI.

The Maryland Science Center, Baltimore, has chosen Andrea Weiss as director of foundation and government relations. Previously, Weiss worked for the Foundation for the National Institutes of Health, the National Kidney Foundation of Maryland, and most recently as principal at Elegance at Work.

Joe Keiper is the new executive director of the Virginia Living Museum of Natural History, Martinsville. Formerly the director of science and curator and head of invertebrate zoology at the Cleveland Museum of Natural History, Ohio, Keiper plans to focus on fund-raising and developing new relationships. He succeeds Timothy Gette, now executive director of the Institute of Texan Cultures at the University of Texas–San Antonio.

The Carnegie Science Center, Pittsburgh, has welcomed Susan Zimecki as its new director of marketing and community affairs. Zimecki, recently a senior manager of public relations at the University of Pittsburgh Medical Center (UPMC), will manage the center’s marketing and communications and will participate in strategic and business planning.