Making a Difference:
The Public Value of Science Centers

- Evidence for Learning in Science Centers and Museums
- Youth Exploring Science: Benefits for Teens and the Community
- Being Purposeful: Planning for, Initiating, and Documenting Public Value
- Putting Public Value to the Test
- The Value of a Visit: Does Visiting a Science Center Motivate Students to Study More Science?
- Who Wants to Be a Science Teacher? A Science Center’s Role in Resolving a Teacher Shortage
- Maloka: Reaching People Where They Live
IN THIS ISSUE

January/February 2010

Those of us working in the field believe that science centers make significant contributions to individuals, communities, and nations. But how can we document and demonstrate that science centers are making a difference? This issue presents a “public value” framework and describes evidence to help centers make the case for their essential contributions. Whether they’re helping people develop positive attitudes toward science, recruiting science teachers, or increasing access to science and technology, science centers have tangible, positive impacts on society.

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Cover: Worldwide, more than 2,400 science centers are making a difference in the lives of 290 million people each year. Photos, clockwise from top left, courtesy Terris Grimes for the Saint Louis Science Center, Boston Children’s Museum, the Marian Koshland Science Museum of the National Academy of Sciences, Terris Grimes for the Saint Louis Science Center, Techniquest Marketing Department, Signature Studio, and the Marian Koshland Science Museum of the National Academy of Sciences.

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To submit news items and ideas for articles, contact Emily Schuster, editor, 202/783-7200 x130; e-mail eschuster@astc.org.
Evidence for Learning in Science Centers and Museums

By Kirsten M. Ellenbogen

In January 2009, the U.S. National Research Council (NRC) published Learning Science in Informal Environments: People, Places, and Pursuits (LSIE). I was one of 14 members of the Committee on Learning Science in Informal Environments, which produced the report. The committee was given a charge to evaluate evidence for learning science in informal environments, the qualities of learning unique to these settings, and the relationship between learning in informal and formal environments. We found extensive evidence that science learning can occur in informal environments, including designed settings like science centers and museums.

The report recognizes that knowledge of science content is important, but provides evidence for a more complete understanding of learning. It articulates six “strands of learning,” a framework that will be useful to science centers in organizing evidence of their public value. The discussion of the strands also includes strong evidence for connections between informal and formal learning environments and the role of science centers in the educational infrastructure.

Four of the six strands in the LSIE report directly overlap with the strands of learning identified in the 2007 NRC report on K–8 formal science education, Taking Science to School. Two strands are unique to the LSIE report: developing interest in science (strand 1) and identifying with the scientific enterprise (strand 6).

Interest and identity

According to strand 1, learners in informal environments “experience excitement, interest, and motivation to learn about phenomena in the natural and physical world.” Science centers can create a foundation for other forms of science learning by eliciting delight, surprise, inspiration, and curiosity. Evidence from research and evaluation shows that there are strong connections among interest, motivation, persistence, and a desire for more challenging learning experiences.

These positive experiences can lead people to identify with the scientific enterprise. Science center visitors begin to “think about themselves as science learners and develop an identity as someone who knows about, uses, and sometimes contributes to science,” as stated in strand 6. In this way, learners develop positive science-related attitudes, emotions, and identities. As evidence has shown, young people with a strong interest in and positive attitude toward science are more likely to pursue science careers.

Learning in science centers and museums

The report presents evidence that designed learning environments, such as science centers and museums, are places where people develop interest in science and positive science-related attitudes and identities. But the strength of that evidence varies. For example, there is considerable evidence that designed learning experiences, such as exhibitions, can have a strong positive effect on learner excitement and emotional responses. And there is some promising evidence that informal science learning experiences can increase children’s motivation and identity related to science careers. Yet these increases in interest virtually disappear within five months.

There is evidence of a longer-lasting impact on children’s science identities from more intensive informal science programming, such as museum-based youth development programs.

More evidence and resources to help make the case for the public value of science centers and museums are available in the LSIE report, which can be read for free online or purchased at www.nap.edu/catalog.php?record_id=12190. The report discusses evidence for learning through designed spaces and programs in science centers and museums at length in Chapters 5 and 6. Other chapters include evidence for learning in media and everyday settings, as well as approaches for designing evaluation and research studies.

The companion report, Surrounded by Science: Learning Science in Informal Environments (www.nap.edu/catalog.php?record_id=12614), provides case studies and reflective questions derived from the findings of the LSIE report.

Overall, the evidence shows that by creating spaces where people can take an active part in their own learning, informal environments like science centers can have a powerful impact on people’s interest in, attitudes toward, and engagement with science.

Kirsten M. Ellenbogen is director of evaluation and research in learning, Science Museum of Minnesota, St. Paul, and president of the Visitor Studies Association. She was a member of the Committee on Learning Science in Informal Environments.
Youth Exploring Science: Benefits for Teens and the Community

By Cynthia Graville-Smith

Founded in 1997, the Youth Exploring Science (YES) program at the Saint Louis Science Center (SLSC), Missouri, aims to help youth facing multiple risk factors to develop confidence in science, technology, engineering, and math (STEM) and feel empowered to pursue academic and career goals. We see evidence of the program’s public value in the participants’ high rates of high school graduation and college enrollment. Beyond its value to participants, YES can benefit the larger community by providing models of youth from urban areas engaging with STEM.

Making a difference to teens

Over 150 teens currently participate in the YES program. Throughout their high school careers, YES teens perform inquiry-based Learning Labs on topics including science journalism and chemistry. They then demonstrate their knowledge by facilitating hands-on activities for the public. In addition, the YES program provides employment skills training (covering topics such as technology and interpersonal communication) and college readiness programming (including preparation for the ACT college entrance exam).

The program seems to be achieving its objectives, as YES teens graduate from high school and pursue higher education at significantly higher rates than their classmates. Of the 2009 senior YES cohort, 31 out of 32 teens graduated from high school, and 30 continued their education at two- or four-year colleges and universities. In contrast, St. Louis had a 22 percent high school dropout rate in 2008, according to state data.

YES online

In 2005, SLSC extended the YES teens’ experience by giving them online spaces to reflect on their STEM learning. YES teens now represent themselves on Web 2.0 sites like Facebook, Twitter, Flickr, Blip.tv, Instructables, and a teen-authored blog site. The YES web site (www.youthexploringscience.com) has over 1,300 blog posts, and the Flickr account (www.flickr.com/photos/youthexploringscience) has over 17,000 pictures.

While this Web 2.0 work gives teens spaces to grow and reflect, it also has the potential to benefit the community. To date, the teens’ blog site has received over 34,000 unique visits, giving people access to images of teens from minority backgrounds engaged in STEM.

These images may be of particular value to other teens in the community. YES teens regularly link their blog posts to their personal Facebook pages, and in 2009, Facebook became the second largest referrer of traffic to the site. This may suggest that the teens’ friends and peers are visiting the YES web site and seeing “their own” reflected within the culture of science. By communicating to diverse publics with authentic, user-generated media, SLSC is reaching out to the community in a way that is both sustainable and mutually beneficial.

Cynthia Graville-Smith is an instructor of converging communication technologies at Saint Louis University and is pursuing her Ph.D. at the University of Missouri, St. Louis. She received ASTC’s 2008 Roy L. Shafer Leading Edge Award for New Leadership in the Field for her work designing, building, and managing the online community for the Youth Exploring Science (YES) program, Saint Louis Science Center, Missouri.

Science Explainers: A Ladder to STEM Careers

In November 2009, the New York Hall of Science (NYSCI), Queens, released a 10-minute video (available at www.nysci.org/video) about its Science Career Ladder (SCL) Program. Since 1986, SCL has recruited young people from across New York City to work as Explainers, acting as the public face of NYSCI and engaging a half million visitors annually. Explainers develop 21st-century skills including communication, problem solving, and collaboration, while exploring careers in science education and the science, technology, engineering, and math (STEM) disciplines.

Through the voices of Explainers and museum staff, the film makes the case for the contributions of informal science experiences to the development of lasting interest in STEM research and science education. An evaluation of the program, carried out in 2009 by the Institute of Learning Innovation, showed that participants:

• largely choose careers and college majors in science and education
• have increased awareness of the role of science in all facets of life
• have an increased level of noticing and drawing connections between their lives and science topics
• develop lasting positive attitudes about science, especially among participants who were intimidated by science upon entering the program
• frequently draw on their experiences in the program in order to see the science behind everyday occurrences and facts.
Being Purposeful: Planning for, Initiating, and Documenting Public Value

By Lynn D. Dierking

So long as a dedication to public service is its driving force, a museum can be a good one in an almost infinite number of ways... In everything museums do, they must remember the cornerstone on which the whole enterprise rests: to make a positive difference in the quality of people’s lives.

—Stephen E. Weil

The discussion of public value is definitely in the air among science centers and museums. Like other nonprofit organizations, science centers are grappling with not only how to purposefully plan for and initiate, but also how to document their public value. The focus shifts to achieving strategic impact for the community rather than operational impact for the institution.

At the most basic level, it is about ensuring that the work of these institutions and organizations is meaningfully connected to the fabric and true needs of the communities in which they reside. No longer is it enough to say that one’s institution is integral to the community. Institutions and organizations must increasingly demonstrate that they are strategically connected and supporting public good to ensure funding and sustainability over time.

This is not a new idea. The U.S. Institute for Museum and Library Services (IMLS), for example, annually makes awards for museum excellence utilizing as a principal criterion “the museum’s commitment to public service through exemplary and innovative programs and community partnerships.” But interest in documenting public service has come into sharper focus in part because of two different, though clearly interrelated, issues: (1) After a time of excess that unfortunately included the nonprofit sector, there is a desire to refocus and return to the core values and mission that these institutions and organizations were created to uphold, and (2) as economic issues plague communities globally, nonprofits are appropriately being asked to concretely demonstrate their public value.

Defining intentions

Before you can document your impact, you have to be clear about what it is you intend to accomplish. The major question that an institution needs to be able to answer is, “How will my community be different in positive and recognized ways because the science center exists?”

A healthy and vital science center is a means toward accomplishing public good, rather than the final goal. To reframe your activities through this lens of community impact, ask yourself: Who is the primary audience you will reach through your strategic efforts? Why did you select this audience? Are the “correct” people from this audience at the table from the outset? What specific audience needs or wants will be met through these efforts? How do you know that these are specific needs or wants of the target audience? How do you plan to reach this audience? How will this audience and the community benefit from your institution’s efforts? How will you know that they have benefited?

Science centers can learn a great deal about defining their intentions from others who work in community organizing and development. The Harwood Institute for Public Innovation, for example, helps organizations become more outward looking in order to improve civic life. Their emphasis is helping organizations purposefully decide what role, such as convener or educator, to fill in order to best serve the community. Self-assessment approaches, such as their Public Capital Framework, which helps organizations determine what kinds of efforts will be most valuable to their communities, are available at www.theharwoodinstitute.org.

Similarly, the Innovation Center for Community & Youth Development offers insights for science centers, particularly those who work with youth. Wendy Wheeler, co-founder and president, recommends that an organization ground its efforts in a theory of change and Logic Models. The theory of change approach was popularized by Carol Weiss of the steering committee of the Aspen Institute Roundtable on Community Change (Connell, Kubisch, Schorr, & Weiss, 1995). It emphasizes the importance of clearly describing the set of assumptions underlying a community initiative, as well as the sequence of steps that will result in particular outcomes. A theory of change is used to develop a Logic Model, which explicitly states the outcomes the initiative will result in, the target audience and participants, the initiative’s context, and strategies for achieving outcomes. Examples of Logic Models are available at www.theinnovationcenter.org. An informal science education (ISE) example can be found in Chapter 3 of the Framework for Evaluating Impacts of Informal Science Education Projects (www.insci.org/resources/Eval_Framework.pdf).

1 Foundations that particularly have supported the application of Weiss’s approach include the W.K. Kellogg Foundation, the Annie E. Casey Foundation, and the Robert Wood Johnson Foundation.
Indicators and measures of impact

Once an organization’s intentions are clear, the task of documenting and measuring its impact becomes possible, and again, there are models to draw on from other sectors of the nonprofit field. For example, the Urban Institute (UI, www.urban.org), a nonpartisan economic and social policy research organization, provides some excellent resources.

The Outcome Indicators Project (www.urban.org/center/cnp/projects/outcomeindicators.cfm), a collaborative effort between the UI and the Center for What Works, provides a framework enabling nonprofits to track and self-assess their achievement of intended community impacts. Of the 14 program areas, four seem potentially relevant to ISE outcomes: Adult Education and Family Literacy, Health Risk Reduction, Youth Mentoring, and Youth Tutoring. For example, one of the intermediate outcomes laid out in the Adult Education and Family Literacy program area is increased parental involvement in children’s education. The UI takes a very school-based view, but an ISE professional could adapt the “spirit” of the outcome and develop more relevant indicators, such as: the number and percentage of parent participants who (a) regularly support their children’s science, technology, engineering, and math (STEM) learning, (b) attend out-of-school time experiences with their children, and/or (c) watch STEM-related television with their children.

Another UI effort, the Arts and Culture Indicators in Community Building Project (ACIP, www.urban.org/projects/cultural-vitality-indicators/about.cfm), focuses on ways to document how cultural activities, in this case the arts, support the quality of life in a community. One idea that may be relevant to ISE professionals is cultural vitality, the level and quality of cultural activity and its role in communities (Jackson & Herranz, 2002). ACIP developed a framework for measuring cultural vitality with three domains: the presence of opportunities to participate in the arts, participation in its multiple dimensions, and support for such participation, particularly from the public, private foundations, commercial sectors, and policy makers. For example, there is evidence that arts participation creates jobs, boosts tourism, helps youth perform better in school, and generally improves quality of life. There is also evidence that cities and regions with higher levels of arts/culture/creativity show increased economic growth and competitiveness (Florida, 2002). Thinking about science centers from a quality of life perspective could be equally useful, providing...

References


Additional Resources

**Building Partnerships**


**Defining Outcomes**


Measuring Outcomes

Putting Public Value to the Test

By David E. Chesebrough

What would have happened to COSI during this latest, deep recession had we not already started changing our business model and relationship with our community? How would we have fared without strategically working to increase our positive impact and public value?

I shudder to think about it, as we had already been through one extremely challenging time after losing our 2004 effort at a funding levy that would have supported the institution. In fact, the “implosion” forced upon us economically in 2004 set the stage for a model shift. We have since operated under the premise that by adding value to our community, often through partnership-based initiatives, we will be seen to have greater impact, and financial support will follow.

Indeed, despite the recession, we have seen continued and even increased support from members and funders. We believe this provides solid evidence of the value our community places on the work of COSI, Columbus, Ohio, and its partners. It also suggests an indicator other science centers might find useful in documenting the response to their own efforts to enhance their public value. (See the discussion of measuring cultural vitality on page 6.)

In the May/June 2009 issue of ASTC Dimensions, we highlighted how we were transitioning COSI from a stand-alone science center to a “center of science” in line with our original name (Center of Science & Industry). Tapping our 320,000-square-foot facility, we’ve been bringing carefully chosen partners into our building. These partners match our mission and enhance our value to the community, advancing both their work and our areas of focus. So far, our partners include the regional Public Broadcasting Service television studio (WOSU@COSI), research labs of the Ohio State University, the Ohio STEM Learning Network, and Metro High School, among others. We also host community activities, including a recent regional Summit on Sustainability and the Environment.

We believe that the rich tapestry of these initiatives and partnerships has increased our public value and impact. A mosaic of indicators over this last year suggests that we are moving along the public perception continuum from “nice” to “necessary,” consistent with ASTC’s new strategic framework. The following evidence suggests early success over the last year, despite the recession.

• Attendance rose 23 percent since last summer, even after we raised admission and membership rates.
• All corporate supporters over $100,000 sustained their commitments to COSI. Our top five corporate donors stayed at the same level of giving, at an annual total of over $3 million. This was in spite of the fact that several of them are in the hard-hit financial and retail markets, and that most admitted cutting support to other organizations.
• Community and political leaders shared with us that among themselves, they prioritized the need “to keep COSI healthy.”
• During the downturn, we were still able to engage 188 new $150+ donors for a 27 percent increase over the previous year, and had almost 50 existing individual donors increase their giving.
• We were included for the first time in a major funding pool by the Columbus Foundation, based on our improving value and importance to the community.
• Our family access memberships grew to over 18 percent of our 18,000+ member households. Our member population now closely matches the county demographics.
• County funding was sustained (albeit at a lower level) in great part due to the effective work COSI was doing to reach and engage families from neighborhoods without a history of accessing COSI.
• Researchers in the Ohio State University’s Center for Family Research (another resident partner) reported effective use of COSI’s Adventure exhibition to model problem solving in their intervention work with families facing multiple risk factors.
• Our special events business grew by more than 100 events, both large and small. As we and our partners hosted (continued on page 12)
With Techniquest in Cardiff, Wales, approaching its 24th birthday, it is legitimate to ask what effect it has had on its visitors, and, in particular, on students. Of course, like all science centers, we have plenty of anecdotal evidence, but ideally, we need solid numbers to impress the policy makers.

Thanks to the foresight of our founder, John Beetlestone, we have 23 years of data that help us answer that question. It was his idea to keep records of the schools, classes, and numbers of educational visitors since Techniquest’s inception in 1986. In addition, we now have eight years’ worth of government data on the number of students taking science subjects each year. Using both sources, we undertook an investigation to see whether there was any correlation between the number of visits a school in Cardiff made to Techniquest and the percentage of students taking science, technology, engineering, and math (STEM) subjects at AS Level (i.e., in Year 12 at age 17).

First, some background. Science as a single subject is compulsory in Wales until Year 11. After that, students choose their optional subjects. The number of students opting for science subjects is an indication of their motivation toward science and, if we compare schools that have visited Techniquest with those that have not, we would hope to find a positive effect. In fact, data from both the preliminary investigation and deeper statistical analysis seems to show that the greater the number of visits to Techniquest, the greater the percentage of students taking science at AS Level.

It’s not that simple

Of course, undertaking this investigation was not as simple as it might have first appeared. The government does not publish the actual enrollment numbers in each class, so we took the number of students taking the General Certificate of Secondary Education (GCSE) mathematics exam in Year 11, which is compulsory for all, as the baseline for the percentage. By the time those students entered Year 12 and chose their optional subjects, the enrollment numbers may have changed slightly. Also, some U.K. secondary schools have all ages from 12 (Year 7) to 18 (Year 13) in the same school, while other schools feed into a separate “sixth form college” for Years 12 and 13. In order to more accurately compare the data, we combined the “feeder” schools and their sixth form college into one big “super” school. This does not take into account other movements between schools, however.

The study focuses primarily on state secondary schools in Cardiff. Religious schools and schools that teach in the medium of Welsh have been largely excluded from the data because they draw their students from all over Cardiff rather than from the area in the immediate neighborhood of the secondary school. Because the school system underwent reforms in 2003 and 2007, we used a window of consistent data between 2003 and 2006. Three science subjects (physics, chemistry, and biology) were selected for the first analysis.

A positive trend

Figure 1 shows the total percentage of students enrolled at AS Level for the three selected subjects at each of the different comprehensive or high schools in Cardiff between 2003 and 2006. A total of 18 schools, six of which are combined as a “super” school, are represented. These results appeared to show that an...
increase in the number of school visits to Techniquest corresponds to an increase in the percentage of students taking science at AS level. However, a more detailed and deeper statistical analysis was needed to confirm this trend.

Independent consultants from the Applied Statistics and Quantitative Modelling (ASQM) Consultancy Unit, Department of Mathematics and Statistics, the University of the West of England, were retained to undertake this analysis. All STEM subjects were included in this analysis rather than just physics, chemistry, and biology. The deeper statistical analysis confirmed the initial positive trends observed in the preliminary investigation. Total enrollments in STEM subjects did increase with an increasing number of school visits.

Figure 2 also shows data from 18 schools in Cardiff. This graph does not combine the “feeder” schools and their sixth form colleges as in Figure 1. Those schools with a percentage of zero are those without a sixth form; those with very high percentages are those who take additional students into the sixth form.

**Recommendations**

While the deeper statistical analysis confirmed the initial positive trends observed in the preliminary investigation, it highlighted a number of anomalies with the data, as described above, and raised further questions that require investigation. There are also, of course, all sorts of potential biases in this data, such as socioeconomic status of a school’s surrounding community or the positive influence of a good teacher.

A more reliable way to confirm the observed correlation between the number of times a school visits Techniquest and the level of enrollments in STEM subjects at AS Level would be to undertake a longitudinal case control study and track the progress of individual students from the commencement of secondary school through to AS Level. This would be a major study over a number of years, and require considerable funding. Tracking individuals would also enable the researchers to determine whether the students visited Techniquest in primary and/or secondary school, or with their families, and how many times.

Clearly there are flaws in our investigation and ways in which the data could be refined. There may be other applicable data sources that we have not yet located. But the underlying trend indicates that we have a positive effect.

**Students enjoy the ground floor exhibition at Techniquest in Wales. The science center examined data to see whether schools that visited Techniquest saw higher percentages of students enroll in STEM subjects.**

*Photo courtesy Techniquest Marketing Department*

Sue Cavell is head of research and evaluation, and Harry White is a science center consultant at Techniquest, Cardiff, Wales, United Kingdom. The authors welcome comments or questions about their study at sue@techniquest.org or harry@techniquest.org.
Who Wants to Be a Science Teacher?

A Science Center’s Role in Resolving a Teacher Shortage

By Judith Lombana and Angela Walters

What impact can a science center have on math and science teaching in its local school district? Over the last six years, the Museum of Science & Industry (MOSI), Tampa, Florida, has contributed to the recruitment of teachers in Hillsborough County, Florida, schools—and we have evidence that our involvement made a difference.

In 2003, it became clear that the district faced a serious math and science teacher shortage. The problem was at its worst among middle school science teachers—about 50 were leaving the county each year, a turnover rate of 50 percent. Overall, Hillsborough County teachers were leaving the profession at a higher rate and with fewer years experience than the other four largest districts in Florida, according to the Florida Department of Education.

The county needed to fill vacancies by reaching out to nontraditional candidates. MOSI became the marketing arm of the Mathematics and Science Teaching, Recruitment and Alternative Certification (MSTRAC) program, a partnership with the school district and the Coalition of Science Literacy at the University of South Florida to recruit and train prospective second-career teachers with backgrounds in science.

The program has been highly successful, filling 250 middle and high school math and science teacher vacancies in Hillsborough County so far. During the past three years, the program focused exclusively on recruiting science teachers and filled 50 middle school science teacher vacancies in the county.

What was the impact of having an informal science center handle the marketing to potential teachers? From the results of a survey of teaching candidates, it appears that the involvement of a respected science museum with high name recognition can motivate people to consider becoming science teachers.

In July 2009, MOSI sent a survey to 450 teaching candidates who attended information sessions at our science center or had called for more information after seeing MOSI’s television commercials, print advertisements, or job fair presentations. The survey had a return rate of 13 percent. Of those responding, 59 percent stated that the fact that MOSI was a partner in the program influenced their decision to request more information about teaching. In addition, 66 percent said that MOSI’s participation affected their decision to attend an information session, and 79 percent found it appealing that MOSI was working with the school district to alleviate the science teacher shortage.

The comments we received from the survey shed even more light on MOSI’s role. One respondent wrote, “Having a science center promote science and math teaching is valuable to stress the importance of these subjects in primary and secondary education.” Respondents also appreciated the personal attention that MOSI was able to give to them, including face-to-face information sessions and assistance with the application process. In fact, one respondent commented that it was “much less intimidating” and “more personal” to participate in information sessions in a science center, rather than at a school. Other respondents said that a science center was a more natural fit for them than a school cafeteria or auditorium, which felt somewhat disconnected from their identities as scientists. One candidate stated, “I couldn’t think of a better place than MOSI to promote mathematics and science.”

This program is one example of what an informal education institution can bring to the table to help its local school system and community. It appears that there is untapped potential for other such innovative informal-formal educational partnerships.

Judith Lombana is vice president of research, grants, evaluation, and government relations at the Museum of Science & Industry (MOSI), Tampa, Florida. Angela Walters was formerly MOSI’s Mathematics and Science Teaching, Recruitment and Alternative Certification (MSTRAC) marketing manager and recently received her Master of Business Administration degree.
Maloka: 
Reaching People Where They Live

By Nohora Elizabeth Hoyos and Sigrid Falla

The public value of science centers is connected to the manner in which they relate to their audiences. Maloka in Bogotá, Colombia, has developed outreach programs for ethnically and socioeconomically diverse audiences nationwide. Our programs aim to reach people where they live, by taking resources directly into their communities and responding to the realities of each region. In particular, our programs are designed to reach vulnerable populations who may never visit our science center, including those who live in remote communities, and others who live in Bogotá but feel a disconnect from science and technology. We aim to start a dialogue and promote lifelong learning by making visible the connections between people’s daily lives and science and technology.

Setting sail

Because there are many municipalities in Colombia without roads or land access, Maloka worked alongside the nation’s Ministry of Communications on the Connectivity Navigator and Pacific Navigator programs. We journeyed by boat on the Magdalena River (the main river of our country) and the Pacific coast to Colombia’s smallest, poorest, and most remote villages. The boats were outfitted as floating classrooms, with computers connected to the satellite Internet system. In all, the Ministry of Communications trained people in 42 communities in how to use the Internet in order to facilitate development and improve quality of life. All the communities either have Internet now or soon will through the Ministry’s efforts. Maloka’s role was to learn about the communities’ realities and share their stories on the project web site (http://colombiaseconecta.gov.co), which has been visited by more than 323,000 people. Through this web site, Maloka also provides tools to help these communities learn more about using the Internet, cell phones, and other mobile technologies.

Cycling for science

As mentioned above, some of Maloka’s programs reach vulnerable public sectors within Bogotá itself. Though these populations are not geographically remote from Maloka, they feel remote and distant from science and technology topics. They often have no interest in visiting the science center, either because of economic difficulties or because they do not feel a clear connection between science and their daily lives. Therefore, we must make a special effort to carry relevant messages directly to these populations.

Through the Maloka Cycle Science program, we send educators on specially designed bicycles to the Cycle Route, where the streets are closed to traffic on Sundays, and Bogotanos from all walks of life go out bicycling. Maloka’s bicycles carry hands-on activities and are fitted with posters that contain information on science and technology. The public can learn about a diverse range of topics and make close connections between science, technology, and their everyday lives. Activities are designed to answer questions about exercising, such as: Why do I sweat? What do I need to eat to be healthy? How do skaters perform their maneuvers without falling down? For that last example, we invited skaters to do demonstrations and we created hands-on activities that explained the physics of their movements. On an average Sunday, we engage 500 people in activities, and more than 10,000 people can see a different face of Maloka in the streets.

In order to create strong public value, science centers must be able to relate to their communities and understand their realities. They need to cultivate the ability to attract diverse audiences or bring relevant programming directly into communities. In this way, centers can empower individuals to participate actively in learning, knowledge, and innovation processes.

Nohora Elizabeth Hoyos is general director, and Sigrid Falla is associate director of research and development at Maloka, Bogotá, Colombia.
Calendar

FEBRUARY

14–20 National Engineers Week (U.S.)
Details: www.eweek.org

MARCH


10–11 Global Marathon For, By, and About Women in Engineering and Technology.
Details: www.eweek.org/EngineersWeek/GlobalMarathon.aspx

27–3–5 NanoDays.
Apr. 4 Details: www.nisenet.org/nanodays

APRIL

13–17 Museums & the Web.
Denver, Colorado.
Details: www.archimuse.com/mw2010/index.html

MAY

6–8 Interactivity 2010.
Details: www.childrensmuseums.org

23–26 American Association of Museums Annual Meeting.
Los Angeles.
Details: www.aam-us.org

JUNE

Details: www.ecsite.eu

OCTOBER

2–5 2010 ASTC Annual Conference.
Hosted by the Bishop Museum, Honolulu, Hawaii.
Details: www.astc.org/conference

(continued from page 6)

ing evidence of centers’ contributions to education, youth development, and local economies.

The other concept that emerged from ACIP is the notion of magnetization (Taylor, 2008)—increased social integration and quality of life in a community. Using this construct, institutions present data that shows that arts activities are desired by neighborhood residents, regardless of socioeconomic class, and neighborhoods with higher concentrations of arts activity have higher levels of neighborhood involvement, stability, and improvement. This is another approach to demonstrating public value that may be useful to science centers.

In conclusion

Museums and other cultural institutions have a deep tradition of public service and social responsibility. John Cotton Dana, an early museum leader who founded the Newark Museum in 1909, felt that a museum’s main objective was to be relevant to citizens’ daily lives and promote lifelong learning and civic engagement (Dana, 1917, 1926; Hein, 2006). Good examples of institutions striving to be of value and service already exist, as recent issues of ASTC Dimensions make clear.

A number of organizations are leading transformation initiatives in their communities and engaging critical audiences in fostering public good. The next challenge, though, is to ensure that this good work is documented, and even more importantly, that the findings are shared, not only in our own community, but also among policy makers and thought leaders. It is a challenge that the ISE community is ready to meet, and we do not have to reinvent the wheel—help is available and a good start has been made.

Lynn D. Dierking is Sea Grant professor in free-choice learning in the College of Science, Oregon State University, Corvallis. This article was adapted from the Community Impact Resource Guide she developed for the Noyce Leadership Fellows program, funded by the Noyce Foundation.

(continued from page 7)

Granted, the evidence is still in need of greater rigor, but the ability of COSI to see so much growth and sustained funding during this recession gives us hope that our greater community value is being recognized and rewarded. We still lost some public funding and had to freeze salaries and absorb positions, but COSI fared far better than we might have done two or more years ago had we not started our model shift.

Based on these indicators and the continued increase in community support for COSI, we believe strongly that by expanding and promoting our positive impact in the community, we are securing our role in our region’s future and our health as an organization.

David E. Chesebrough is president and CEO of COSI, Columbus, Ohio, and co-chairs the ASTC Board’s Impact and Communications Task Force.
By the Numbers:

Highlights from the ASTC Statistics Survey Data

By Christine Ruffo

Science centers bring educational, cultural, and economic value to their communities. In 2008, regional science center networks estimated that there are more than 2,400 science centers worldwide with an annual attendance of 290 million. These visitors value science centers as a trusted resource; 84 percent of respondents to a 2008 Reach Advisors–ASTC study described information presented by science centers as “very trustworthy.” Science centers support both formal and informal learning environments, serve as spaces where their communities can connect with science, and add value to the local economy while enriching lives.

Science centers have tremendous global reach. The 445 science centers and museums that belong to ASTC are located in 45 countries. There are ASTC members in every U.S. state (36 in California alone). The following data, gathered between July and September 2008 in the ASTC Statistics Survey, helps to illustrate the value of science centers to their communities around the world.

ASTC estimates that there were 81.2 million visits to ASTC member centers worldwide in 2008 (60.3 million in the United States). School groups make up a significant percentage of science center and museum attendance—an estimated 17.6 million student visits worldwide (13.4 million in the United States).

But school field trips are only part of science centers’ educational contributions: Most offer demonstrations and workshops (89.7 percent), professional development for teachers (81.0 percent), science camps (65.1 percent), overnight camp-in programs (54.4 percent), and resources for home-schooled schoolers (57.9 percent); many (48.7 percent) offer after-school programs.

Most science centers have membership programs (88.2 percent of respondents); 168 institutions reported a total of 808,937 memberships (many including several family members). Many centers (29.2 percent) offer programs designed for senior citizens. Besides the hands-on, experiential exhibits and programs that are the hallmark of science centers, many have large-format theaters (reported by 30.3 percent of survey respondents), planetariums (38.5 percent), and outdoor science parks (31.8 percent).

As cultural amenities, science centers add value to their local economies. Most charge for general admission (89.2 percent). While they rely on public funding, 43 cents of every operating dollar comes from ticket sales, program fees, facility rentals, and other earned income sources; 25 cents from public funds; 28 cents from private donors; and 4 cents from endowment income. Science centers also bring jobs to their communities. More than 18,500 paid employees were reported by 191 institutions. On average, personnel costs constitute 53 percent of operating expenses.

The public value of science centers is also evident in the extraordinary contributions citizens make to their local centers as volunteers. Most science centers and museums (91.8 percent) have volunteer programs; 171 institutions reported 77,870 volunteers. The number of volunteer hours reported by 166 institutions worldwide totaled 2,640,983. Among 148 U.S. respondents, volunteer hours totaled 2,105,670—a contribution worth $41 million.1

1 Respondents included 195 ASTC member institutions—161 from the United States, 7 from Canada, and 27 from 19 other countries.

2 Based on the 2007 Independent Sector benchmark of $19.51 per hour for value of volunteer time.

Christine Ruffo is ASTC’s manager of research. For more information, contact pubs@astc.org to purchase a copy of the 2008 ASTC Sourcebook of Statistics & Analysis. The 2009 ASTC Statistics Survey data will be available to ASTC members in late January. Survey participants can contact cruffo@astc.org to receive the raw data for free; other ASTC members may purchase it for U.S.$100.
Welcome to ASTC

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

SCIENCE CENTER AND MUSEUM MEMBERS

• Durango Discovery Museum, Durango, Colorado. The Children’s Museum of Durango, founded in 1994, began drafting plans in 2002 to convert an 1893 powerhouse into an interactive science museum. Seven years and $5.3 million later, the museum has nearly completed fund-raising efforts to open the new, larger, LEED-registered venue in late 2010.  
• Hopewell Museum, Paris, Kentucky. First open in 1996, this 5,000-square-foot museum is housed in a 1910 Beaux Arts building that served as the City of Paris Post Office. The museum’s Mary Spears Van Meter Learning Center features activity spaces where young visitors can discover how cattle, hemp, tobacco, and horses played a central role in the community’s history.  
• Imagination Station, Toledo, Ohio. The science center formerly known as COSI Toledo celebrated its grand reopening October 10, 2009, after being closed for two years. Visitors welcomed back several favorite exhibits, such as the High Wire Cycle and the Gravity Room, and were introduced to new exhibitions—part of the $1 million spent in capital renovations.

• NIDO FORTIFIED Science Discovery Center, Pasay City, Philippines. Designed to help the country bolster its science, math, and engineering competencies, the 22,600-square-foot science center, open since October 2007, features nine galleries and a 158-seat Digistar Planetarium.

• Philippine Science Heritage Center, Taguig City, Philippines. The Science Heritage Center is a project of the Philippine National Academy of Science and Technology. First opened to the public in 1998, the center seeks to highlight Filipino contributions to science and technology, and to promote a strong science-technology culture in the country.

SUSTAINING MEMBERS

• Digitalis Education Solutions, Inc., Bremerton, Washington  
• Sparks, Philadelphia, Pennsylvania.

Surrounded by Science: ISE Summit 2010

By Wendy Pollock

Virtually all people of all ages and backgrounds engage in informal science learning in the course of daily life. In fact, despite the widespread belief that schools are responsible for addressing the scientific knowledge needs of society, the reality is that schools cannot act alone.

—Surrounded by Science

Leaders in informal science education from across the United States will gather March 3–5 in Washington, D.C., for the second Informal Science Education (ISE) Summit (www.insci.org/ise-summit). Taking as its theme “Surrounded by Science”—the title of a new publication from the U.S. National Research Council—the ISE Summit 2010 will celebrate how science centers and the broader ISE field together address “the scientific knowledge needs of society.”

Organized by the Center for Advancement of Informal Science Education (CAISE) with support from the U.S. National Science Foundation (NSF), the ISE Summit 2010 has been designed to mobilize, energize, and empower the ISE community. It will feature the outstanding efforts of those working with support from NSF’s ISE program and other leaders conducting innovative work in ISE at the local, state, and federal levels. Participants will report on the impact of their work, explore emerging issues, identify potential collaborators, and build a compelling case for the contributions of ISE. Speakers will include Neil deGrasse Tyson, host of NOVA scienceNOW, and high-level officials from agencies that strongly support ISE.

The ISE Summit will build on the initiatives of CAISE Inquiry Groups that are now investigating a series of critical questions, including:

1. What are the actual scope and scale of the ISE field and its changing dynamics?
2. What are the ISE contributions to science, technology, engineering, and math (STEM) learning and how can these be expanded?
3. What opportunities and barriers do current public policies present to the realization of the full potential of ISE?

In the lead-up to the ISE Summit, an Inquiry Group led by John Falk of Oregon State University (OSU) and Carlos Manjarrez of the U.S. Institute of Museum and Library Services has launched a national effort to build a crowd-sourced portrait of the ISE “infrastructure”—the places and pursuits that ignite curiosity and support lifelong science learning. Another Inquiry Group, led by Kevin Crowley of the University of Pittsburgh Center for Learning in Out-of-School Environments (UPCLOSE) and Philip Bell of the LIFE Center at the University of Washington, will help to build shared vocabulary about learning in informal settings while gathering concrete examples of the “six strands of learning.” (See the article on page 3).

Founded in 2007, CAISE is a partnership among ASTC, OSU, UPCODE, and the Visitor Studies Association, devoted to strengthening the ISE field and its changing dynamics. Our vision is of a field that is recognized for its contributions to the nation’s STEM education infrastructure, and which contributes significantly to broadening participation in science among citizens of all walks of life.

All those interested in these issues are invited to participate in the online CAISE Forum (http://connect.astc.org; enrollment key: “informal”) and subscribe to the CAISE Newsletter (www.insci.org).

Wendy Pollock is principal investigator of CAISE and of ExhibitFiles, a community web site for exhibition practitioners.
Science Centers Deep in the Heart of Texas

Science center professionals and informal science educators from all over the globe gathered in Fort Worth, Texas, from October 31 to November 3, for the 2009 ASTC Annual Conference. Attendees enjoyed all of the down-home hospitality (and barbecue) that Fort Worth had to offer. They took a step back in time to Texas’s cowboy past at the Stockyards National Historic District, visited the cultural district’s museums and galleries, and even took in a concert by the Grammy Award–winning band They Might Be Giants at the brand-new Fort Worth Museum of Science and History.

More than 1,300 attendees from 31 countries made the journey to the Lone Star State, with the largest non-U.S. delegations hailing from Canada, the United Kingdom, and China. In the Exhibit Hall, 148 booths represented 122 exhibiting companies and organizations. Attendees participated in more than 100 conference sessions exploring creativity in informal science education, as well as how science centers can address key societal issues, in keeping with the conference theme, “The Art of Science: Creating a Better Future/El Arte de la Ciencia: Hacia un Futuro Mejor.” Audio recordings of most sessions can be purchased on CD from Convention Recordings International. Visit www.conventionrecordings.com and click on “Conferences.” A complete set costs $149.

We would like to thank President Van Romans, COO Charlie Walter, and their staff at our host museum, the Fort Worth Museum of Science and History, for welcoming us so graciously.

A new era

ASTC’s outgoing president, Lesley Lewis (the Ontario Science Centre, Toronto), introduced ASTC’s new CEO, Anthony (Bud) Rock, at the Saturday business meeting. Rock comes to ASTC from Arizona State University, where he served as vice president for global engagement. Prior to that, he had a 25-year career at the U.S. State Department that culminated with a five-year appointment as acting assistant secretary and principal deputy assistant secretary of state responsible for oceans, environment, and science. ASTC’s Board, members, and staff are all delighted to welcome Rock to ASTC. We look forward to his leadership as ASTC strives to make science centers stronger, more relevant, and essential to their communities.

Officers and directors installed

In ASTC’s 2010 election, four new officers were elected for one-year terms: Nancy Stueber (Oregon Museum of Science and Industry, Portland), president; Chevy Humphrey (Arizona Science Center, Phoenix), vice president; Bryce Seidl (Pacific Science Center, Seattle), secretary-treasurer; and Erik Jacquemyn (Technopolis, Mechelen, Belgium), member-at-large. Tuan Chiong Chew (Science Centre Singapore) and Joanna Haas (Louisville Science Center, Kentucky) were re-elected for three-year terms. Linda Abraham-Silver (Great Lakes Science Center, Cleveland, Ohio); Ann Fumarolo (Sci-Port: Louisiana’s Science Center, Shreveport); David Mosena (Museum of Science and Industry, Chicago); and Carol Valenta (Saint Louis Science Center, Missouri) were elected to the Board for the first time. Many thanks to Kim Cavendish (Museum of Discovery and Science, Ft. Lauderdale, Florida), Wit Ostrenko (Museum of Science & Industry, Tampa, Florida), Gillian Thomas (Miami Science Museum, Florida), and Dennis Wint (Franklin Institute, Philadelphia, Pennsylvania) for their service on the Board.

VanDorn named ASTC Fellow

Bonnie VanDorn, retiring ASTC executive director, received ASTC’s highest honor, the ASTC Fellow Award for Outstanding Contribution. VanDorn served as ASTC executive director beginning in 1982, following her tenure as director of education at the Pacific Science Center, Seattle.

As they presented the award, Wit Ostrenko, ASTC immediate past president, and Lewis commended VanDorn “for leading ASTC from its modest beginnings to a truly global community of science center professionals, while simultaneously expanding the size, stature, and strength of the entire field. Bonnie used a reflective encyclopedic knowledge of ASTC’s members—the people they employ, the challenges they face, and the audiences they serve—to help build capacity, nurture creativity, and cultivate inclusiveness in all. Buoyant, brilliant, inquisitive, and persevering, she steered ASTC’s course steadfastly for 27 years, earning our deepest admiration and respect.”

Kass receives ASTC President’s Award

Lewis also presented a new honor—the ASTC President’s Award—to Judy Kass, former director of public understanding of science and technology at the American Association for the Advancement of Science (AAAS). Kass was recognized for her role as the primary link between AAAS and ASTC, most notably for her contributions to the 1994 publication Diversity in Science and Technology Centers and to Project MOSAIC, a three-year, U.S. National Science Foundation–funded project to further equity goals in programs, exhibits, and training in science centers.

Speakers highlight science centers’ importance

Technology innovator, philanthropist, and space explorer Anousheh Ansari gave the keynote address, entitled “Science Centers as Agents of Change,” on Saturday morning. Deeply committed to bringing people together for social change, Ansari spoke of the great potential she sees in science centers for inspiring curiosity and action on societal issues. “One thing we need to do is make sure we cultivate imagination in young kids,” Ansari said. “Science centers are wonderful, wonderful places to do that.”
At the Sunday plenary session, “Angry Public vs. Grateful Public: Mixing Politics and Science,” Michael Halpern of the Union of Concerned Scientists in Washington, D.C., moderated a discussion with panelists from science organizations that have encountered controversial issues. Speakers Susan F. Wood, formerly of the U.S. Food and Drug Administration; Paul Sandifer of the U.S. National Oceanic and Atmospheric Administration; and David E. Blockstein of the U.S. National Council for Science and the Environment discussed how science centers can encourage discourse and debate, and help the public become science literate and well informed.

**Six Edgies awarded**

Four ASTC-member organizations and two science center professionals were honored with the 2009 Roy L. Shafer Leading Edge Awards. The awards, presented annually at the conference banquet, commemorate the late Roy L. Shafer, a former science center director and ASTC president. Now in their fifth year, the “Edgies” recognize both small and large ASTC members and/or their employees for extraordinary accomplishments in Business Practice, Visitor Experience, and Leadership in the Field during the past three years. Recipients receive an etched glass award and a paid registration to the following year’s ASTC Annual Conference.

Jury chair Alan Nursall, principal, NEXT Exhibits + Creative Communication, Sudbury, Ontario, Canada, presented the Leading Edge Award for Business Practice to the Sciencenter, Ithaca, New York, for its Sustainability Initiative. In addition to converting to 100 percent sustainable wind power, composting food waste, and installing environmentally friendly restroom hand driers, the Sciencenter contributed to a wide range of community-building efforts, from increasing the center’s accessibility to all socioeconomic groups to creating a new salary-health-retirement package for staff. The jury also praised the center’s willingness to share the initiative’s framework with other institutions.

Recipients of the Leading Edge Awards for Visitor Experience were announced by jury member Grant Troop, COO, Ontario Science Centre, Toronto, Canada. In the Small Institution category, the Bakken Museum, Minneapolis, Minnesota, was honored for its Science Assets-Based School Partnership Program. The program supports elementary students and their teachers by bolstering science assets—defined by the museum as the attitudes, skills, and knowledge that form the foundation for continued achievement in science. A partnership between the museum and the Minneapolis Public Schools, the program is expanding to serve 2,700 district fourth graders and their teachers.

In the Large Institution category, the jury gave two Visitor Experience awards. Carnegie Science Center, Pittsburgh, Pennsylvania, won for BrainCake.org, where 11- to 17-year-olds can access scholarship and science information, receive homework help, ask mentors for advice, and blog about science. BrainCake.org is one of the four core programs of the center’s Girls, Math & Science Partnership. With a growing global database of over 9,000 members, the web site also counts more than 1 million hits and nearly 30,000 individual visitors monthly.

The Norsk Teknisk Museum in Oslo, Norway, won its Edgie for Klima X, a global climate change exhibition that breaks new ground for immersive environments. Visitors are required to put on rubber boots before entering the exhibition, where the entire floor is covered with four inches of water. The flooded floor, huge blocks of melting ice, sheets of rain, and smoking chimneys create an unforgettable visitor experience and reinforce the exhibition’s educational framework.

The jury also decided to bestow two Leading Edge Awards for Experienced Leadership in the Field. The awards were announced by Marti Cortez, senior vice president of visitor experience and human resources, Saint Louis Science Center, Missouri. The first recipient was Christopher Andrews, director of the Steinhart Aquarium and chief of public programs at the California Academy of Sciences, San Francisco. Andrews was the guiding force in developing the visitor experience—including the aquarium, natural history museum, planetarium, and all educational and public programming—for the new California Academy of Sciences, which reopened in September 2008 and has hosted about 2.5 million visitors since opening day. The jury also noted his ability to inspire and nurture creative thinking across academy departments.

Rachel Meyer, executive director of the Coyote Point Museum for Environmental Education in San Mateo, California, was the second recipient. Meyer led a top-to-bottom revitalization of a museum on the brink of extinction. Not only did she revamp the museum’s educational philosophy and transform the visitor experience, but she also set the museum on stronger financial footing. Due to her leadership, attendance is up 15 percent in the last year, membership has increased by 10 percent, and the museum has had balanced operating budgets for the last two fiscal years, after seven years of significant deficits.

We extend our congratulations to all of the 2009 winners and sincere thanks to this year’s Leading Edge Awards jury, which, in addition to Nursall, Troop, and Cortez, included Margie Marino, the North Museum of Natural History and Science, Lancaster, Pennsylvania; Edward Mooney, the National Canal Museum and Hugh Moore Park, Easton, Pennsylvania; and Jodi Schoemer, the Denver Museum of Nature & Science, Colorado. ASTC also thanks the Franklin Institute for hosting the jury deliberation.

Guidelines and nomination forms for the 2010 Edgie competition are available online (www.astc.org/about/awards/leading_edge.htm). The application deadline is April 6, 2010. For more information, contact ASTC membership director Diane Frendak, 202/783-7200 x112; dfrendak@astc.org.

**ExhibitFiles Awards**

Tom Nielsen of Tucson, Arizona, and Jason Jay Stevens of San Antonio, Texas, received this year’s ExhibitFiles...
The 2009 ASTC Annual Conference (clockwise from top left): Bonnie VanDorn (left), retiring ASTC executive director, greets conference attendees, including Elsa Bailey of the U.S. National Science Teachers Association (center); ASTC’s new CEO, Anthony (Bud) Rock, introduces the Sunday plenary session; independent consultant Jamie Bell, Giovanna Longhi of Asociación Tera Nostra in Costa Rica, and Alejandra León-Castellá of Fundación Cientec in Costa Rica share a laugh at the conference banquet; Anders Liljeholm (right) of the Oregon Museum of Science and Industry engages attendees in hands-on nano activities at the NISE Net table in the ASTC Resource Center in the Exhibit Hall; John Flansburgh (left) and John Linnell of the Grammy Award–winning band They Might Be Giants autograph CDs; conference attendees enjoy a sneak peek of the Fort Worth Museum of Science and History’s new facility; Steven Willis of the Museum of Science and Industry, Chicago, attends the ASTC Diversity & Leadership Development Fellows Program Workshop. Photos by Christine Ruffo, ASTC, except where indicated.

Awards. Both were honored for their thoughtful and thought-provoking exhibition reviews. Many thanks to Nielsen, Stevens, and all of the members of ExhibitFiles (www.ExhibitFiles.org), who are helping to build this collective resource for the exhibition field. ExhibitFiles was developed in collaboration with Ideum, with support from the U.S. National Science Foundation.

Thanks to 2009 conference sponsors

As always, we are deeply grateful to the sponsors who made the conference possible:
• Silver Partner Evans & Sutherland and Spitz, Inc.
• Emerald Partners Lexington Design + Fabrication and Superior Exhibits & Design, Inc.
• Turquoise Sponsor Exhibit Consortium, LLC
• Jade Sponsors Ansel Associates, Inc. and Imagine Exhibitions.

We offer our sincere appreciation to these and our many other sponsors, whose generous contributions totaled $68,450.

The Aloha Spirit

We look forward to ASTC 2010, which will be hosted by the Bishop Museum in Honolulu, Hawaii, October 2–5. The conference theme, “Ho’okele—To Navigate: Science Centers as Wayfinders to New Horizons,” looks to the future as defined by the new ASTC strategic direction to “proactively address critical societal issues locally and globally where science understanding and public engagement are essential.” We hope you’ll find your way to Hawaii to join us.

The Global Marathon

ASTC is pleased to support the 2010 Global Marathon For, By, and About Women in Engineering and Technology, organized by the U.S. National Engineers Week Foundation. This year’s marathon, to be held March 10–11, will include live Internet chats, webcasts, teleconferences, and prerecorded sessions from around the world. Presenters are women in engineering and technology who will share their expertise and passion about their careers. Events will follow the sun around six global regions (North America, Latin/South America, China, India, Africa, and the United Kingdom/Europe) in four-hour blocks. Consider hosting an event in your community that will support girls’ interests in engineering and technology. For more information, visit www.eeweek.org/EngineersWeek/GlobalMarathon.aspx or contact Margaret Glass, mglass@astc.org.
DO THE ROBOT—Carnegie Science Center’s roboworld may be just the thing Pittsburgh needs to complete its transition from “Steel City” to “Robburgh.” The 6,000-square-foot exhibition, which opened June 13, 2009, captures the world of robotics, of which Pittsburgh has become a prime manufacturer.

The exhibition’s more than 20 interactive stations elaborate on the three robotics themes of Sensing, Thinking, and Acting. Visitors can choose to program a hallway route for a hospital Service Bot, learn about robotic luminaries like Star Wars’ R2-D2 and the Mars Sojourner in the Robot Hall of Fame, or stop in the Robot Workshop to interact with roboticists or even tinker on their own.

A streak of local pride runs throughout roboworld. Pittsburgh is home to more than 30 robot manufacturers as well as to Carnegie Mellon University, which features a robotics institute. Carnegie Science Center’s own robotics education programs include classes, camps, and the traveling exhibition Robotics. One of the local products found in the exhibition is Robot Rx, which automates pharmacy services in one-third of U.S. hospitals.

In developing roboworld, the science center took special care not to play just to those “pre-wired” to like all things robot. As Dennis Bateman, director of exhibit experience, pointed out, “The color palette, architecture, lighting, and text style were all done to draw in an audience that might peek into a typical ‘robot workshop’ design, and think, ‘Not for me.’ We have been, anecdotally, very successful in attracting and, more importantly, retaining broad family groups.”

The exhibition was made possible in part by $1 million leadership gifts from both the Grable Foundation and the Bozzone Family Foundation.—Diana Cohen Altman

Details: Kim Amey, project manager, roboworld, AmeyK@CarnegieScienceCenter.org, or Dennis Bateman, director of exhibit experience, BatemanD@CarnegieScienceCenter.org

ONLY YOU—You! The Experience, a permanent exhibition that opened October 8, 2009, at Chicago’s Museum of Science and Industry, really is all about you. Driving the more than 50 hands-on experiences are personal lifestyle and health choices we all face.

The exhibition urges a proactive stance on health and well-being through a variety of hands-on experiences. In Get in the Action, a virtual coach teaches visitors hip-hop dance, tai chi, and basketball moves. In the Human Hamster Wheel, a display provides feedback on visitors’ aerobic movements. Face Your Future affords perhaps the ultimate self-check, as a computer ages the visitor’s face up to 50 years based on habits and lifestyle.

The hub of the 15,000-square-foot exhibition is a 13-foot-tall Giant Heart, with both physical and digital components—the next generation of the museum’s former walk-through heart exhibit. Visitors can see the operation of heart valves, witness a heart attack, or synchronize the heartbeat, via hand grips, to the rhythm of their own hearts.

In You! The Experience, visitors can “diagnose” and “treat” medical conditions using iStan, a human patient simulator. Photo by JB Spector, Museum of Science and Industry

Evident throughout the exhibition is a strong collaboration among development, design, and education personnel, as well as with outside partners. A concept advisory committee composed of experts in medicine, education, business, and science informed the health concepts and medical technologies that fuel the exhibition. Thinc Design, New York City, worked with museum staff to develop the exhibition’s vision and overall design, and Maltbie, A Kubik Company, Mt. Laurel, New Jersey, did the exhibit fabrication.

Other vendors included ASTC members Design Island, Orlando, Florida; Mad Systems Inc., Orange, California; and Unified Field, New York City.

Developed over four years at a cost of $21.5 million, You! The Experience was made possible by Abbott, the Abbott Fund, and the Pritzker Foundation. J. Ira and Nicki Harris Family, Mazza Foundation, and Robert S. and Susan E. Morrison provided additional major funding.—D.C.A.

Details: Patricia Ward, project director for You! The Experience and director of science and technology, patricia.ward@msichicago.org

ECSITE AT 20—Throughout the world, science centers join in associations that represent their common issues and goals. In 1989, 23 museums voted in Paris to found Ecsite, the European Network of Science Centres and Museums. What first united the members of this organization—and what still keeps them together—is a strong commitment to creating public engagement through accessible, interactive exhibits and programs. Twenty years later, Ecsite is still expanding, with 421 members in Europe and worldwide.

A number of achievements mark Ecsite’s past two decades:

• Participation in Ecsite’s annual conference has steadily increased; 2009 saw 1,000 delegates attending from 55 countries.

• Ecsite has developed training courses for explainers and scientists, for collaborative projects, and soon, for evaluation of exhibits.
Grants & Awards

This year, three ASTC members were among the five institutions that received the 2009 National Medal for Museum and Library Service, the highest U.S. honor for museums, from the Institute of Museum and Library Services (IMLS). Winners include the Children’s Museum of Pittsburgh, Pennsylvania; Cincinnati Museum Center, Ohio; and the Museum of Science & Industry, Tampa, Florida.

IMLS recently awarded 51 National Leadership grants, totaling $17.9 million. The following ASTC members were among the recipients:
- The American Museum of Natural History, New York City: $677,993 to improve middle school science education, in collaboration with the New York Hall of Science.
- The Museum of Science, Boston: $100,000 for a research study on institutional conditions that prevent the inclusion of people with disabilities in museum learning.
- The New Jersey Academy for Aquatic Sciences, Camden: $877,090 for Community of Learning for Urban Environments and Science (CLUES), a new model of learning and professional development for underserved communities in the Philadelphia area.
- The New York Hall of Science, Queens: $75,205 for a research study to investigate how interactions with youth floor staff contribute to visitor experience. In collaboration with the Peabody Museum of Natural History.
- The Peabody Museum of Natural History, New Haven, Connecticut: $249,399 to provide 50 teachers with professional development and curricula using inquiry-based methods based on real-life events.
- The Lawrence Hall of Science (LHS), Berkeley, California, was one of seven recipients of IMLS’s 21st Century Museum Professionals grants, which totaled $1.7 million. LHS received $313,843 to implement a professional development program for science museum educators.

The following ASTC members have recently been awarded U.S. National Science Foundation grants:
- The Adler Planetarium, Chicago: $297,000 to investigate audience engagement with online citizen science projects.
- The Detroit Science Center, Michigan: $73,000 to develop “The New Milky Way: Exploring Our Home in the Universe,” a 3-D planetarium show and television documentary.
- The Exploratorium, San Francisco: $250,000 for a two-day “Art As a Way of Knowing” conference on art-science education.
- The Maryland Science Center, Baltimore: $158,000 to produce “Research Video News,” 90-second science news stories for local newscasts.
- The Miami Science Museum, Florida; ASTC; and SECMF Inc.: $452,475 to support the Girls RISE (Raising Interest in Science and Engineering) Museum Network, to help informal science educators to encourage minority girls, grades 6 to 12, to pursue careers in science and engineering. Participating museums include: the California Academy of Sciences, San Francisco; the Connecticut Science Center, Hartford; COSI, Columbus, Ohio; Explora, Albuquerque, New Mexico; the Louisville Science Center, Kentucky; the Maryland Science Center, Baltimore; the Miami Science Museum, Florida; the New York Hall of Science, Queens; the Saint Louis Science Center, Missouri; and Sci-Port: Louisiana’s Science Center, Shreveport.
- The New Jersey Academy for Aquatic Sciences, Camden: $432,000 for the CLUES project.
- The New York Hall of Science, Queens: $2.1 million to develop Wild Minds: What Animals Really Think, a traveling exhibition to provide awareness of the evolutionary and cognitive links between animals and humans; $800,000 to fund the creation and management of a Virtual Hall of Science to further the understanding of virtual environments.
- The Science Museum of Minnesota, St. Paul: $1.7 million to create “MathCore for Museums,” interactive exhibits centered on basic math concepts. Collaborating partners include ASTC members the Museum of Science, Boston; the Museum of Life and Science, Durham, North Carolina; and Explora, Albuquerque, New Mexico.

Science World British Columbia, Vancouver, Canada, has been awarded a total of $11.5 million (CAD) from the Canadian government to renovate and upgrade facilities, prepare an architectural facility master plan, and create an Outdoor Science Gallery. Science World also received $240,000 (CAD) from BC Hydro and Terasen to hold the BC Green Games Contest to reward students for green efforts.

The New Jersey Academy for Aquatic Sciences, Camden, received grants from the William Penn Foundation ($92,400), United Way of Camden County ($60,000), Verizon ($5,000), and the TD Charitable Foundation ($5,000) to support Community and Urban Science Enrichment Program (CAUSE), a youth leadership development program.
Catawba Science Center, Hickory, North Carolina, has chosen Alan Barnhardt as its new executive director. Barnhardt was executive director of Carolina Raptor Center in Huntsville, North Carolina, from 1999 to 2008. Barnhardt has also served on the boards of directors for both the Boy and Girl Scouts in Charlotte, North Carolina, and is an environmental and community advocate. He succeeds Mark Sinclair, who has retired after 21 years of service to Catawba Science Center. Sinclair most recently led the science center through its expansion, which included a planetarium and aquarium.

The Anchorage Museum and Imaginariaum Discovery Center, Alaska, welcomes John Pepper Henry as its new director. Henry was previously an associate director at the Smithsonian’s National Museum of the American Indian. Henry brings with him 20 years of museum-related experience. He succeeds Chris Cable, who has left the museum after a long career to fulfill his lifelong dream of volunteering in the Brazilian rain forest.

RedPop, the Network for the Popularization of Science and Technology in Latin America and the Caribbean, has elected Joaquín Fargas, director of Exploratorio, Centro Científico Tecnológico Interactivo, Argentina, as executive director. Fargas succeeds Alejandra León-Castellá, Fundación Cientec, Costa Rica.

The Science Museum of Virginia Foundation welcomes Annie Magnant as its new executive director. The foundation is the private fund-raising arm of the Science Museum of Virginia in Richmond. Magnant joins the foundation after 10 years as president of the Arthritis Foundation, Virginia Chapter, where she created and implemented a comprehensive fund-raising campaign.

Peter Radetsky, former principal at the exhibition and design firm Fricker & Radetsky, and former director of Creative/Content Development for BBH Exhibits and Clear Channel Exhibitions, died of pancreatic cancer on August 19, 2009. He developed numerous exhibitions for science centers and museums worldwide, and wrote seven books.