

A Shared Passion:

Leveraging Resources Through Museum-University Projects

Can an intimate, informal museum find happiness with an ivy-clad institution of higher learning? Yes, if the two share a passion for science communication. In this article, three small U.S. science centers describe how their talents and flexibility have won them long-term partnerships with academe.

The Testing Ground

By Ronen Mir

Scientists in universities often develop models of science communication that they would like to try out in real-world situations. Science centers, with their wide diversity of visitors, are an ideal venue for testing and implementing new technologies and programs quickly and at relatively low budgets.

The testing of a new technology is the focus of a collaboration between SciTech Hands On Museum, Aurora, Illinois, and the University of Illinois at Chicago (UIC). Several years ago, professor Andrew Johnson of UIC asked the museum to test and evaluate the Geowall Virtual Reality (VR) learning lab, a technology developed for undergraduate geology studies. A prototype was established at the museum in the summer of 2002 with equipment on loan from UIC's NSF-funded Electronic Visualization Laboratory.

The 15-minute VR sessions at SciTech are conducted by a trained museum explainer. Models available for viewing range from an ant, a bee, and a deep-sea angler fish to the workings of the human heart, the distribution of earthquakes on Earth, and a journey through the universe. Each session includes an explanation of the technology, an opportunity for



SciTech visitors manipulate the Hourglass, one of four exhibits designed by University of Chicago SCOPE students. Photo by Ronen Mir

visitors to manipulate the 3-D models, and commentary on the models seen. The explainer answers questions and ends with an informal evaluation of the experience.

Since the Geowall has been up and running, the VR lab has hosted approximately 4,000 visiting adults and children. The most popular application, says one explainer, has been the virtual heart: "It gives them a real sense of what it looks like and how it works." The earthquake model is favored by teachers, who like its clear presentation of major fault lines.

A second university collaboration at SciTech focuses on science programming—specifically, the presentation of current science research. In early 2003, University of Chicago (UC) physics professor Leo Kadanoff approached the museum about developing a program to train graduate students in science communication. Kadanoff says he picked SciTech because the museum constructs the majority of its own exhibits and he thought staff would be able to help

students implement their ideas. Three months later, the partners launched SCOPE (Sci-Tech Chicago Outreach Pilot Exploration) with \$607,000 in NSF funding.

The 12 UC graduate students who participate in SCOPE each year come from physics, computer science, anthropology, and the social sciences. They are divided into two focus groups: Environment/Materials Science and Cosmology. Training is conducted jointly by university "coaches"—scientists with experience in hands-on exhibits design—and by SciTech's exhibits, education, visitor services, and management teams.

Participants work on exhibit research and design, exhibit prototyping, evaluation of exhibits, signage, and development of VR educational programs using the UIC Geowall setup. They also visit other science and natural history museums in Chicago. Their final challenge is to design their own projects for SciTech's visitors.

The first focus groups implemented an exhibit on "Sand Castle Science" and the VR cosmology program "Journey Through the Universe." More recently, groups have developed the *Wild World of Sand* exhibition, with four interactive exhibits, and new VR programs based on data collected by the Sloan Digital Sky Survey.

The coupling of university scientists with graduate students allows the program to cover both cutting-edge science and accurate fundamental science. As a "guide on the side," the coach encourages students to generate ideas and to appreciate the varied talents that each brings to the table. As one participant comments, "It helps that not everyone has the same expertise." SCOPE has demonstrated

that it can prepare confident science communicators; several program graduates are now employed in Chicago area museums. ■

Ronen Mir, a former research scientist, is executive director of *SciTech Hands On Science Museum, Aurora, Illinois*; www.scitech.museum. Information about the Geowall project is available at www.geowall.org; for more on *SCOPE*, go to mps.uchicago.edu.

A Conduit for Science

By Ann Fumarolo

At Science Central, in Fort Wayne, Indiana, we have developed successful partnerships with three local universities, but our largest collaborator is Indiana University–Purdue University Fort Wayne (IPFW). Five ongoing projects illustrate the range of this relationship.

For preservice teachers in IPFW's science education department, the museum serves as a laboratory. Students fulfill requirements for professor Jeff Nowak's course on field trips by creating pre- and postvisit educational materials and an activity linked to a floor exhibit. Everything is tied to the Indiana state standards and developed across three grade levels.

As a final exam, the preservice teachers come to the museum and deliver their programs to a visiting school class. Afterwards, each evaluates his or her own performance, and the classroom teachers evaluate the materials. This feedback is forwarded to IPFW.

The project has been a win-win situation for the partners. Not only do the young teachers get invaluable hands-on experience in teaching science, but all of the materials they create are donated to the museum. Although it takes time to evaluate and integrate the student projects, the result is that our library of potential floor programming has grown tremendously. And once these young teachers have their own classrooms, we find that they like to schedule field trips to the mu-

seum—and sometimes even request that we use the materials they created.

Another ongoing project is "Lunch with a Scientist," offered in collaboration with IPFW's department of science. One Saturday a month, a research professor comes to Science Central and offers a two-hour program for students in grades 4 to 8 and their families. Before lunch, the scientists talk informally about their areas of expertise, why they followed a particular career path, and what education that required. After lunch, each professor leads a hands-on activity that demonstrates his or her research in the field. This program sells out every year, with a waiting list for the next year.



Though located in a small Indiana town, Science Central has been able to forge partnerships with three local universities. Photo courtesy Science Central

In collaboration with IPFW's engineering department, Science Central hosts several competitions for middle school students, including First LEGO League, Future Cities, and Bridge Building.

Our newest collaboration has yet to yield results. IPFW and the museum have recently joined forces to pursue acquisition of one of the most complete mastodon skeletons found in the United States. If we are successful, the skeleton will become the property of IPFW but will be on loan to Science Central for 10 years. The university will handle science content, and the museum will provide educational programming and exhibit design. We are working together to raise funds for the project.

Finally, the single most important contribution IPFW makes to Science

Central is to authenticate our educational materials. As a small museum we do not have staff from every discipline of science; IPFW scientists volunteer their time to read and evaluate our programs for scientific accuracy. In the process, they often suggest other program ideas. This shared passion for accuracy and depth of information has allowed Science Central to become a strong conduit for informal science education and the first place where people in our community come with questions about science. ■

Ann Fumarolo is director of Science Central, Fort Wayne, Indiana; www.sciencecentral.org.

Da Vinci's Heirs

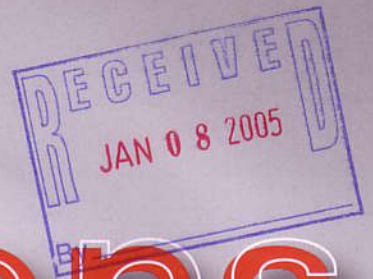
By Lin Erickson and Carol Pulham

Once a major industrial and steel-producing area, the Lehigh Valley of Pennsylvania is becoming an incubator for new science and technology businesses. Key to this renewal is the educational development of young people. Success depends not only on improving student achievement in science, but also on increasing the quantity, quality, and diversity of the science-teaching workforce and encouraging the best and brightest students to pursue science and technology careers in the region.

The Discovery Center of Science and Technology, an independent hands-on science center in Bethlehem, Pennsylvania, has been addressing these challenges since 1995 through a variety of programs that promote hands-on science (Continued on page 7)



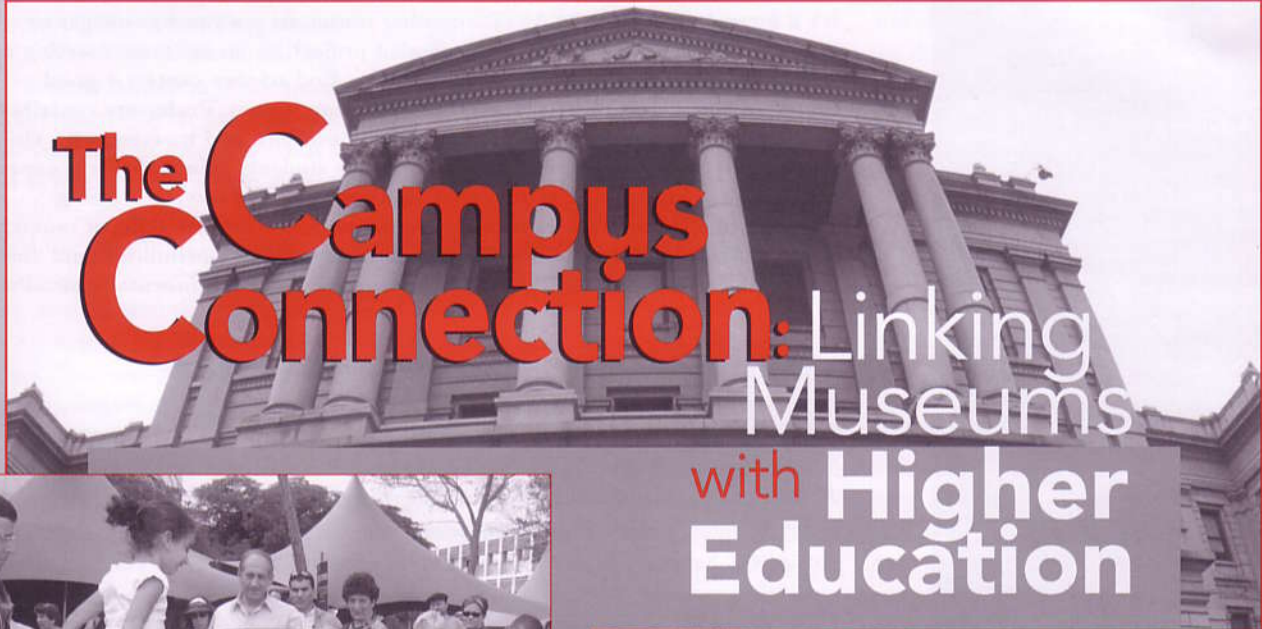
The Da Vinci Discovery Center of Science and Technology at Cedar Crest College will be a learning laboratory for exploring best practices in teaching with scientific inquiry. Artist's rendering courtesy Da Vinci Center



Dimensions

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The Campus Connection: Linking Museums with Higher Education

with **Higher Education**



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