

# **Pacific Science Center's Science Carnival Consortium Project: A Qualitative Evaluation**

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## **Introduction**

Science Learning, inc. (SLi) was engaged by the Pacific Science Center (PSC) to conduct a summative evaluation of PSC's Science Carnival Consortium (SCC) project, a National Science Foundation-funded program designed to assist new or developing science centers with opening and operating their institutions. Based on input from a meeting of new and developing science centers at the 1990 annual meeting of the Association of Science-Technology Centers (ASTC), PSC staff designed a program that provided a core set of exhibits and educational materials to participants, training in how to develop, design and construct exhibits and educational programs of similar quality and technical advice and support during start-up and opening. Seven emerging science centers were selected to participate in the SCC project.

The evaluation was designed to determine the extent to which the Science Carnival Consortium fulfilled its primary mission of facilitating the creation of these new science centers, as well as to assess the relative efficacy of the project as a model for future collaborative endeavors. Project staff identified the following three key evaluation questions:

1. Have participants opened their facilities and are they still operating?
2. Have participants developed one new exhibit, demonstration, educational program or special event that reflects the qualities expressed during training (the Management Seminar)?
3. Has the attendance generally increased over the period of the grant, or are they serving a reasonable number?

Beyond documenting the various impacts of the program, the evaluation was also designed to compare participating new or developing science centers with non-participating science centers. Although the design of this evaluation was qualitative and the sample size of participating and non-participating sites too small to consider them truly traditional controls, they served to provide some baseline data against which to compare the impacts of the SCC program. The following evaluation questions identified by Project staff guided this component of the evaluation:

1. How beneficial was it to receive a core set of well-built, proven exhibits versus developing their own or finding sources to buy exhibits?
2. As a result of the SCC Management Seminar, were participants more confident about developing new exhibits, demonstrations, educational programs or special events than non-participants?
3. What was the value of the networking or bonds created between participants during the grant period?
4. What was the value in being able to call on expertise from other developing science centers and/or from the PSC?

### Consortium Participants

Seven new or developing science centers from around the country were selected to participate in the Science Carnival Consortium project. Each was able to demonstrate that they had sufficient financial resources and organizational commitment to undertake the project. The participating science centers were:

- Discovery Science Center, Ocala, Florida
- Discovery Science Center-Launch Pad, Santa Ana, California
- Explora! Science Center, Albuquerque, New Mexico
- Headwaters Science Center, Bemidji, Minnesota
- The Imaginarium, Waterloo, Iowa
- Odyssey Science Center, Inc., Tallahassee, Florida
- Science Spectrum, Lubbock, Texas

### Non-Participating Sites

Six non-participating science centers were selected utilizing selection criteria to “match” them with participating centers. Selection criteria included the size of the institution and its community, the centers’ location, operating budget and the number and type of exhibits. Non-participating sites had not been involved with the PSC prior to this evaluation. The non-participating science centers selected were:

- Brevard Art Center and Science Museum, Melbourne, FL (providing information on Space Coast Science Center, Melbourne, FL)
- Discovery Science Center, Fort Collins, Colorado
- Discovery Center Museum, Rockford, Illinois
- Great Explorations Hands-On Museum, St. Petersburg, Florida
- Imagination Station, Wilson, North Carolina
- Raven Hill Discovery Center, East Jordan, Michigan

### **Methodology**

Two types of data were used to assess the impact of the Science Carnival Consortium project: 1) On-site, face-to-face interviews with three participating SCC sites and two non-participating sites, and 2) telephone interviews with the remaining four participating SCC sites and four non-participating sites. The purpose of site visits and interviews was to answer the evaluation questions described above and there was an effort to select representative sites to visit. Site visits were not made to each participating and non-participating science center so it is important to recognize that there may have been some bias introduced within the evaluation design, although all efforts to avoid it were utilized. In addition to these data, monthly reports, phone conversation logs, training feedback, notes and recollections of staff, as well as notes taken by SLi at the 1994 ASTC meeting when participants made their final presentations, provided additional feedback. Key project staff were also interviewed in February 1995 to debrief about the project. Tables 1 and 2 show the distribution of site visits and interviews for participating and non-participating sites.

## Site Visits

SLi researchers made half-day site visits during Fall 1994 and Winter 1995 to a sample of participating sites and conducted face-to-face interviews with directors, supporting staff and volunteers and, at a few centers, Board members. In addition, site visits were also made to a sample of non-participating science centers and face-to-face interviews conducted with the directors and a few Board members (Tables 1 and 2).

## Telephone Interviews

Administrators at the remaining four participating and non-participating science centers were interviewed by SLi researchers by phone in late Winter 1995. Interviews lasted 30 to 60 minutes and utilized the same interview questions used during site visits. In addition, interviews with non-participating sites touched on some other issues including: the history and development of the science center, the long range planning process, the most pressing current needs, as well as the center's use and experience with exhibit development, demonstrations, educational programs, special events, and marketing and promotions. These interviews also sought the respondent's experiences with and attitudes toward collaborations, both with large science centers and with similarly sized science centers.

# **Results and Discussion**

## Operations

All but one of the participants (Odyssey in Tallahassee, Florida) felt that consortium involvement had resulted in the center opening earlier than expected with more extensive, high quality exhibits than would have been possible otherwise; one site opened at the same time as originally projected, but felt that the opening was greatly enhanced by SCC participation. SCC project participants appreciated the professional development opportunities afforded by the initial management seminar and the ongoing mentoring and support provided throughout the project which resulted in a high level of competence and confidence among

participants. Participants described how the SCC project fit into their ongoing institutional agenda, citing a number of outcomes resulting from SCC participation:

1. The SCC was an efficient and affordable way for start-up institutions to initially acquire high quality exhibits and programs without building and developing their own.

2. The acquisition of high quality exhibits and the implementation of high quality programs — which appeared polished and state of the art — provided strong leverage for fund raising and acceptance and support in the community.

3. In some communities that had been dubious about starting a science center, the SCC was a means to demonstrate the vision of a science center to the local community. In other communities, SCC participation served to galvanize the institutions, facilitating their ability to open sooner and serve visitors far earlier than expected.

4. The SCC enabled the centers to achieve and/or maintain a higher profile in their communities.

In a few cases the impacts were profound. Although most of the science centers had no hesitations about becoming involved in the SCC project, for Explora! Science Center in Albuquerque, New Mexico, this was not the case. Prior to the SCC, Explora! Science Center had been floundering as an organization for some time. When the Science Carnival Consortium Project was presented as a possibility to Explora! Science Center's Board, they were unsure whether they wanted to participate. However, according to Janine Boire, Executive Director, the impact of the SCC for Explora! Science Center exceeded even the most optimistic predictions:

*“It was a challenge to get the board to go along with the Science Carnival Consortium. [The board feared what] a previous study had shown — that an interim facility would take energy away from development of a permanent facility. Our experience was that this was not true, quite the opposite, support has quadrupled, and we have had double the projected attendance.”*

The publicity and excitement generated by Explora! Science Center's being awarded the SCC project galvanized the inactive organization. National Science Foundation involvement provoked a lot of press coverage. The Albuquerque community rallied around the project, new board members joined the organization and Explora! Science Center caught the eye of the city government of Albuquerque. Once the city became involved, an interim facility was secured and an executive director was hired with city funds.

### Exhibits & Educational Programs

Most of the sites were not choosing to build their own exhibits at the time the summative evaluation was being conducted, but all except one site (Launch Pad, Santa Ana, CA) indicated that they would like to design and perhaps even build their own exhibits eventually. Furthermore, some of the centers planned to take an active role in the design — if not the actual fabrication — of new exhibits. For instance, Odyssey in Tallahassee, Florida is currently working with a design firm to devise a long-term exhibit plan and Explora! Science Center anticipates a similar relationship with a design firm in Albuquerque. Whether the SCC sites planned to build their own exhibits in the future or not, they did seem to have a clear sense of what constituted a high quality exhibit and what type of exhibit would “work” with their community, insights that PSC played an important role in shaping during the training seminar and subsequent professional development opportunities.

Depending upon the background, interests and skills of staff and volunteers, as well as the resources available to them, SCC science centers approached exhibition acquisition and development at their sites in a variety of ways. A few of the sites had attempted some exhibition development before attending the management seminar (Headwaters, Explora! Science Center, Science Spectrum and Odyssey) with very limited success, (“We had no idea what we were doing”). Two of the sites, Headwaters Science Center in Bemidji, MN and The Imaginarium in Waterloo, IA, went back after the seminar and attempted to design and construct at least one exhibit based on the principles learned there.

There were a number of reasons why exhibit development and fabrication did not seem to be a feasible alternative for most of the sites at this stage in their development. Lack of staff or volunteers with the right expertise and the time to devote to such a labor-intensive endeavor was

the most limiting factor. Many of the sites were also limited by a lack of workshop space and equipment. Sandy Henry of Science Spectrum in Lubbock, TX, felt that although exhibit fabrication was an eventual goal for them, staff determined that it was too risky to undertake in the early phases of the organization. Most of the other sites felt similarly.

All of the participating SCC science centers conducted demonstrations for visitors during start-up and continue to do so, although some centers integrated them more fully into their programs than others. Launch Pad in Santa Ana, CA, for example, conducts demonstrations at regular time intervals, regardless of the number of people in the center, in order to enhance the visitor experience and achieve program consistency. This was a new arena for all of the SCC sites, except Explora! Science Center and Science Spectrum, which had developed demonstrations on their own before SCC participation. All felt that PSC expertise in this area had benefited them greatly.

### Comparing Participants with Non-Participants

Beyond documenting the various impacts of the program, the evaluation was also designed to compare the start-up experiences of participating centers with the start-up experiences of a sample of comparable non-participating centers. Although the qualitative design of the evaluation meant that these were not traditional controls, they served to provide some baseline against which to compare the experiences of participating sites. Comparisons revealed that all seven SCC science centers had opened earlier than the six non-participating sites, with more extensive, high quality exhibits and were serving more visitors than non-participating sites had at similar points in their development. All seven SCC sites were also offering a far more comprehensive series of educational programs than the six non-participating institutions and attributed this to the training and ongoing professional development provided through the consortium. Overall, it was clear that participation in the SCC project had resulted in these seven science centers being ahead of the game in many areas of operation, including knowledge of exhibition development, implementation of educational programs, and attendance, when compared to non-participating sites at similar points in their development. The SCC centers were much more savvy, seemed more aware of their strengths and weaknesses from the outset, and knew where and how to access needed resources.

## Challenges

Despite the success of the project, there were many challenges. In particular, there were a number of issues complicating start-up for these institutions, which were not originally conceived as appropriate issues to be addressed by a National Science Foundation grant. For example, although there was much variance among SCC science centers in terms of whether they were housed in interim or permanent sites, virtually all of the science centers grappled with an array of issues relating to their buildings -- e.g., asbestos removal, meeting occupancy codes, rising costs of construction, the need to remodel, donated versus purchased buildings, etc. For those participating science centers that had not yet secured permanent facilities, "the building" continued to be their major preoccupation throughout the project. Another issue complicating start-up was the need for mentoring related to fund raising, since local fund raising and income generation was key to many of these SCC centers' survival. Participants often described special events as important for fund raising and income generation and felt that PSC had provided a strong preparation in this area.

Other sites had to deal with local politics that influenced their ability to function as well, or as autonomously, as they had hoped. For instance, at Odyssey in Tallahassee, FL, a quick rise in construction costs delayed and complicated building the science center. At Launch Pad, Santa Ana, CA, severe economic problems in Orange County, CA, complicated capital campaign efforts enabling them to move from a temporary site in a mall to a permanent facility. Discovery Science Center in Ocala, FL, had three executive directors since opening and while SLi visited Ocala in December 1994, the Board voted to dissolve the corporation and join forces with a non-profit umbrella organization at the community college that is intent on creating an art center. These individuals feared that the community college was far more interested in developing an art center in the community than continuing to nurture and expand the science center. It is still not clear how this decision, now being contested, will affect future operations of the Discovery Science Center.

During training and subsequent professional development, the SCC Project did not specifically address any issues related to procuring buildings, fund raising or local politics. However, because there were pressing issues for the sites, they did influence participants' perceptions



of the project and its effectiveness at meeting their needs. During staff debriefing interviews, Project staff discussed some of the inherent tensions that developed within the project when trying to focus on the science education goals of the NSF grant, while also supporting the incipient science center as it struggled with day-to-day issues such as raising monies or procuring buildings within which to house science education programs.

All except one of the seven sites seem to be operating well; it is not clear at present whether this will be the case for the six sites five years from now, but it seems highly likely. Less clear is the fate of Headwaters Science Center in Bemidji, MN, probably the most precarious site at this moment. Since their ability to raise money in the community is limited, they continue to live hand-to-mouth and Dr. Laddie Elwell, Director, remains concerned about the future should current efforts to procure money from the state be unsuccessful.

In summary, the following outcomes were observed:

1. All except one of the participants felt that consortium involvement had resulted in the centers opening earlier than expected with more extensive, high quality exhibits than would have been possible otherwise.
2. All participants developed at least one new exhibit, demonstration, educational program or special event that reflected the principles laid out by PSC during training.
3. Attendance at all sites increased over the period of the grant.
4. Project participants felt that it was beneficial to receive a core set of exhibits and non-participating centers felt that this was an area that would have benefited them the most during start-up.
5. When compared to non-participants, participants were far more confident and knowledgeable about developing new exhibits, demonstrations and other educational programs.
6. The networking opportunities were among the most valuable aspects of the SCC project. Non-participants had found it difficult initially to find other centers of comparable size and need with which to interact.
7. Participants found the assistance provided by the well-established PSC invaluable and non-participants felt that such interactions would have been beneficial to them as well.

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## Conclusions and Implications

Evaluation findings supported the benefit of a consortium model, focused on exhibits and programming, between a well-established science center and smaller institutions. The often-cited benefits included the opportunity to avail oneself of a core set of high quality exhibits, model demonstrations, educational programs and marketing materials, as well as to work together, share insights with one another, and support other new and developing science centers. Participating sites expressed a strong desire to stay in touch and continue to share ideas, potentially collaborating on other projects, as time and resources permit.

Another obvious implication of this effort confirmed the need for ongoing training and support for new and emerging science centers. Ideally, this training and support would include offerings relevant to participants prior to start-up, as well as offerings relevant to institutions during other phases of operation such as stabilization and expansion.

One final implication of this study was a reaffirmation of the important educational role that a small regional science center can play in its community. Findings gathered from attendance records, community members and surveys administered at sites by site staff, indicated that all 13 science centers included in this evaluation study, both participating and non-participating centers, were providing essential science education programming in their communities; many of these programs were reaching important underserved audiences such as rural communities and minorities. Despite the important roles they are playing in their communities, many of these new and emerging science centers are struggling financially to keep their doors open and to maintain high quality exhibits and programs. The SCC project proved to be an effective model for providing much needed training, exhibits and programming support to such new and emerging centers.

**Table 1**  
**Distribution of site visits and interviews for participating centers**

| <b>Participating Centers</b>                               | <b>Site Visit</b> | <b>Phone Interview</b> | <b>Other Feedback</b> |
|--|-------------------|------------------------|-----------------------|
| Discovery Science Center, Ocala, Florida                   | X                 |                        | X                     |
| Discovery Science Center-Launch Pad, Santa Ana, California | X                 |                        | X                     |
| Explora! Science Center, Albuquerque, New Mexico           |                   | X                      | X                     |
| Headwaters Science Center, Bemidji, Minnesota              | X                 |                        | X                     |
| The Imaginarium, Waterloo, Iowa                            | X                 |                        | X                     |
| Odyssey Science Center, Inc., Tallahassee, Florida         |                   | X                      | X                     |
| Science Spectrum, Lubbock, Texas                           |                   | X                      | X                     |

**Table 2**  
**Distribution of site visits and interviews for non-participating centers**

| <b>Participating Centers</b>  | <b>Site Visit</b> | <b>Phone Interview</b> | <b>Other Feedback</b> |
|---|-------------------|------------------------|-----------------------|
| Brevard Art Center and Science Museum, Melbourne, FL (providing information on Space Coast Science Center, Melbourne, FL) |                   | X                      |                       |
| Discovery Science Center, Fort Collins, Colorado  |                   | X                      |                       |
| Discovery Center Museum, Rockford, Illinois   | X                 |                        |                       |
| Great Explorations Hands-On Museum, St. Petersburg, Florida   | X                 |                        |                       |
| Imagination Station, Wilson, North Carolina   |                   | X                      |                       |
| Raven Hill Discovery Center, East Jordan, Michigan  |                   | X                      |                       |