

# Best Practices in Large Scale Events

## Event Planning and Implementation

Each year the National Aeronautics and Space Administration (NASA) sponsors a variety of public outreach events to share information with educators, students, and the general public. These events are designed to increase interest in and awareness of the mission and goals of NASA. Outreach events range in size from relatively small family science nights at a local school to large-scale mission and celestial event celebrations involving hundreds to thousands of members of the general public. Ideally, such events are assessed to determine whether the intended objectives were met, with evaluation methods and results made available to guide future events planning and evaluation. This report was generated by reviewing reports from large-scale events, but the best practices included can be pertinent for all event organizers and evaluators regardless of event size.

**Best Practices** can be useful for events of **all size**.

**Large-scale events** are attended by more than **1,000** visitors.

McREL conducted a literature review focused on identifying evaluations of large-scale public outreach events—and based on these evaluations identified best practices. Journal articles and evaluation reports were reviewed to gather information about public outreach events such as science-related festivals, annual conventions, and exhibitions at public locations. McREL staff looked the following criteria to identify potential journal articles and reports:

- Public, science-related events open to adults and children.
- Events with more than 1,000 attendees.
- Events that occurred during the last 5 years.
- Evaluations that included information on data collected from visitors and/or volunteers.
- Evaluations that specified the type of data collected, methodology, and associated results.

The articles and evaluation reports were then characterized as either descriptive studies or explanatory studies. At this point, additional criteria were applied for a study to be summarized:

- For descriptive studies to be included and summarized in the literature review, the document needed to include information about the planning and implementation of the event.
- For explanatory studies to be included and summarized in the literature review, the document needed to include information about data collection methods, type of data, and the outcomes based on the results.

## Summary of Best Practices

The literature review revealed key considerations for event planning and implementation.

### 1) Advertise the event

- Word of mouth can be a powerful way to advertise. Cadenhead and Ong (2012), found that 32% of participants and 59% of the participating scientists learned about the event by word of mouth. The only better way to advertise for the event, according to Cadenhead and Ong was through direct communications channels (e.g., email, newsletters) from the sponsoring institution.

### 2) Use and advertise access to scientists

- Scientists raise the level of visitor engagement (Arcand & Watzke, 2010; Cadenhead & Ong, 2012).
- The format of large-scale events makes the public “more comfortable about asking questions of scientists and experts” (4.70 out of 5) (Cadenhead & Ong, 2012, p. 18)
- Engaging in hands-on science with a scientist is a new activity for about 21% of attendees (SFA, 2013). The 2011 results suggested that festivals gave minorities opportunities to interact with science practitioners that they hadn’t had prior attending (SFA).
- “Attendees who reported an interaction with a science professional were 15% to 19% more likely to report positive learning impacts” (SFA, 2012, p. 24).

### 3) Recruit scientists using these findings

- 43% to 69% of participating scientists reported thinking about their work differently after interacting with the public (McNalley, 2010; Cadenhead & Ong, 2012).
- High percentages of scientists (85% to 96%) from most events were interested in participating again (SFA, 2013; McNalley, 2010; Ong, 2011; ).
- On average, scientists *strongly agreed* that they would encourage colleagues to participate (Cadenhead & Ong, 2012; Ong, 2011).
- 65% to 75% of STEM practitioners reported increased confidence when interacting with public audiences after being part of a science festival. (Manning, Lin, King, & Goodman, 2012; SFA, 2013).

### 4) Ensure that the event is group and particularly child friendly

- Children drive event attendance. The most common reason given for attendance at LSRW was that “their child was interested in attending” (Cadenhead & Ong, 2012; Ong, 2011). This theme was echoed in the report by Manning and colleagues (2012) who noted that respondents’ most common reasons for attending were because of a general interest in science (44%) and supporting the learning experience of children or others (27%). The Science Festival Alliance reported across all events and years, four out of every 10 attendees came with one or more children ages 5 to 16 (2013). In comparison to the Smithsonian

science museum visitors, nearly 30% more SFA science festival carnival and expo visitors came with one or more children ages 5 to 16 (SFA, 2013).

- Groups (and the presence of children) tend to increase engagement (Arcand & Watzke, 2010) During FETTU, children often asked questions and discussed images with their parents. Parents acted as the “expert” answering their children’s questions. Arcand and Watzke observed that “...children frequently approached the panels with their hands closely following their eyes, while adults would often stand with hands in their pockets” (p. 5).
- More interaction and engagement was associated with more fun, more interest, and more learned (SFA, 2013). Jensen and Buckley (2012) argue that practitioners should “recognize and employ a range of engagement methods to reach different audiences” (p. 16).

## 5) Target specific event outcomes

The large-scale events studied reported increases in

- Learning (Arcand & Watzke, 2010; Jensen & Buckley, 2012; SFA, 2013)
- Inspiration / excitement Arcand & Watzke, 2010; Jensen & Buckley, 2012)
- Desire to learn more (Cadenhead & Ong, 2012)
- Interest in local science (Cadenhead & Ong, 2012; Jensen & Buckley, 2012; SFA, 2013)
- Making science learning fun (SFA, 2013)
- Reaching underserved audiences (SFA, 2013)
  - Expos/carnivals had a greater proportion of minorities in attendance than other events (47% vs. 33%, overall) (SFA, 2013).
  - “The ‘buzz’ of the science festival context may reach individuals at a different level than science broadcasts as well as possibly allowing for discussion of more complex topics” (Jensen & Buckley, 2012, p. 13).
- Interactions with scientists (Jensen & Buckley, 2012; SFA, 2013)
  - 20% of attendees had verbally addressed a STEM practitioner for the first time (SFA, 2013).
  - The most impactful experience at all of the science festivals has been “contact with a professional scientist or engineer” with “attendees who reported an interaction with a science professional ... 15% to 19% more likely to report positive learning impacts” (SFA, 2012, p. 24).
- Continued interaction with science.
  - Within six weeks after the festival, almost 50% of festival partners had been contacted by festival attendees who were following up on information received at the festival (SFA, 2012).

- One year follow-ups with SDSFE and CSF indicated that 54% looked for information on something they had learned at the festival; 39% took part in activities related to what they had learned, and 44% used learnings in their work or studies (Manning et al., 2012).

## Studies Reviewed

- Arcand, K., & Watzke, M. (2010). Bringing the universe to the street: A preliminary look at informal learning implications for a large-scale non-traditional science outreach project. *Journal of Science Communication, 9*(2), 1-13.
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