Beyond Science Centers: Examining Public Engagement across the Field of Informal Science Education

Premise:
This study examined how different types of informal science education* organizations think about and approach public engagement with science**, and how these organizations relate to science centers and to one another.

*Informal Science Education (ISE): Informal STEM education (ISE) is an approach to learning that encourages exploration of STEM in settings outside of the formal education system.
**Public Engagement with Science (PES): For the purposes of this study, we defined public engagement with science as structured opportunities in which general publics interacted with scientists about scientific research or concepts. PES activities should involve mutual learning by publics and scientists (McCallie et. al., 2009).

The study was done in the context of the Portal to the Public (PoP) Network, a community of 60 ISE organizations that use the PoP framework to train and support scientists in face-to-face engagement with public audiences. Because the framework was originally designed for science centers, PoP Network leadership wanted to better understand other types of ISE organizations and how they were using PoP.

PoP Network as of October 2017:

Methods:
Jessica Sickler (J. Sickler Consulting) conducted 22 individual interviews:
- 7 zoos/aquariums
- 3 botanical gardens
- 4 natural history museums
- 3 university outreach programs
- 2 research centers
- 2 supporting professional groups

Sickler coded transcripts for key themes, organized within a larger structure of the project’s main questions.

Findings:
- Zoos & Aquariums
  - Core characteristics: Immersive experience • Living collection • Specific content focus • Clear mission
  - Field-wide values and priorities: Animal welfare • Conservation • Behavior change
  - How mission ties to conveying STEM content: Zoos are laser-focused on conservation. Conveying STEM content may be a means to an end (behavior changes by visitors).
  - Why involve scientists? Scientists lend credibility and can help convey that the scientific work at a zoo or aquarium is sound.
- Natural History Museums
  - Core characteristics: Collections-based • Specific content focus • Researchers on staff
  - Field-wide values and priorities: Relevance • Collections focus • Dialogue
  - How mission ties to conveying STEM content: Education is in their mission statement.
  - Why involve scientists? Conveying current STEM research can help demonstrate the relevance of research. Most natural history museums have researchers on staff and working with external researchers can build valuable new relationships.
- Botanical Gardens
  - Core characteristics: Aesthetic goals • Living collection • Specific content focus • Applied science (horticulture)
  - Field-wide values and priorities: Aesthetics • Stewardship • Citizen science
  - How mission ties to conveying STEM content: Education is in their mission statement.
  - Why involve scientists? Scientists can establish botanical gardens as a place of science and research in visitors’ minds. Many botanical gardens have (applied) scientists on staff.
- University Groups
  - Core characteristics: Breadth of science topics and expertise • Broad, widespread programming • Multiple, dispersed outreach groups
  - Field-wide values and priorities: Advancing Research • K-12 & Inquiry • Awareness of institution • Broader impacts
  - How mission ties to conveying STEM content: It’s indirect: focus is on conducting research.
  - Why involve scientists? Community engagement goals and Broader Impacts requirements
- Research Centers
  - Core characteristics: Specific content focus • Researchers on staff • Limited staff dedicated to outreach
  - Field-wide values and priorities: Advancing research • Graduate student career development
  - How mission ties to conveying STEM content: It’s indirect: focus is on conducting research.
  - Why involve scientists? Broader Impacts requirements

Museum-types (zoos/aquariums, natural history museums, and botanical gardens) shared some commonalities:
- Collections
- Specific content focus
- Public interest in their “insiders”
- Researchers and/or applied scientists on staff

Academic-types (university outreach groups and research centers) shared some commonalities:
- Research is their focus, not education/outreach
- Researchers on staff

Science centers, in contrast, have:
- An established venue
- An established audience
- An education-focused mission

So what and what’s next?
Organization-type influences how organizations work with scientists and why they choose to convey STEM content. However, entering into the PoP Network may influence how a non-science center approaches public engagement. The approaches to PES used by staff from organizations that were members of the PoP Network differed from those who were not members in several ways:

- PoP Sites
- Non-PoP Sites

Students
Established Scientists
Any STEM content
Mission-related content
All skill levels
Already skilled communicators

It is unclear whether these organizations come to PoP with a different mindset about PES, or if the PoP framework changes their standard approach.

The findings from this study will be the basis for updates to the new, expanded Portal to the Public Implementation Manual, a practical guide for organizations looking to bring scientists together with public audiences.

Let’s Talk!
What are the core characteristics and field-wide priorities of science centers?

- How have you collaborated with other types of ISE organizations?
- When did your goals and priorities overlap (and when did they not)?
- How can we improve the ways in which our fields talk to each other and learn from one another?

Reference:

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