

CONVERGENT LEARNING FROM DIVERGENT PERSPECTIVES: THE IMPACT OF INTERDISCIPLINARY COLLABORATION IN INFORMAL LEARNING ENVIRONMENTS

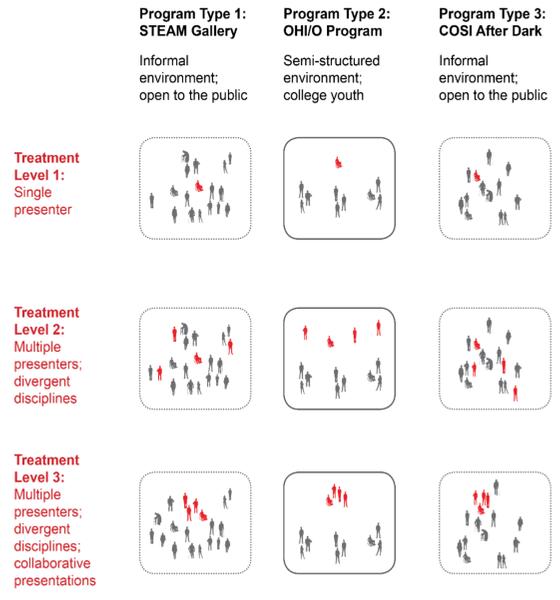
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COHORT ACTIVITIES

Our ongoing NSF-AISL project[^] brings together researchers with diverse disciplinary expertise to build collaborative projects that engage public audiences in science. This program is scaffolded by using best practices in informal science communication to build interest and group cohesion. Collaborative communication of the thematic content will be evaluated in three informal learning environments:

- 1) Franklinton Friday as STEAM Gallery:** Pop-up or incidental learning at presentations to public audiences at community events
- 2) OHI/O program:** Experiential learning in a semi-structured environment with creative problem-solving challenges for youth aged 9-18
- 3) COSI after dark:** Informal learning through presentations on a convergent topic at a science museum.

Each team of researchers will present in the three treatments (individually, sequential non-collaborative, and collaborative). The project will evaluate outcomes and improve ongoing programs by integrating science learning, public engagement and peer mentoring. Our first theme was "Energy" which included individuals from material science, engineering, and psychology.



CONVERGENT PROJECT: THEME "ENERGY"

Each convergent project aims to bring together the expertise of each researcher into a collaborative presentation. Our first cohort worked on the idea of using a wearable sensor to help caretakers understand a person with communication-related disabilities. This incorporated the study of autism with environmental and wearable sensor technologies. They tested their idea at COSI After Dark (right).

At the event, they proved that a sensor could tell when someone was in a calm mood or a state of agitation. They asked participants to look at a monitor displaying a calm ocean or a busy city street. Observers could tell when the participants transitioned between these two videos based on the sensor data. All participants got agitated during the city video, except one. In an interview, the one participant who was agitated by the ocean video has a fear of the ocean.



WORK IN PROGRESS

We have currently completed the first cohort with the theme of Energy. We are currently collecting data on the themes Movement and Space.

SELF IDENTITY

How do the scholars participating in convergent cohorts understand the practice of communicating science to the public?

Our first cohort of scholars received training similar to Portal to the Public at COSI in preparation for their individual presentations. The scholars judged the role of communicating science to the public to be in line with their views of themselves at teachers. They view their public communication as separate from their researcher (below). There was even some tension that their outreach and teaching were less valuable than research (below).

"But you know I'm an educator above all, that's why I'm in academia, right? Otherwise I'd be doing engineering in industry. But I see this perception a lot. They think that I'm kind of the weirdo doing outreach stuff. I feel like lots of people see it as a waste of time and resources. I don't know, I enjoy doing it."

"I think more teaching. I do teaching for undergrads, as well as I do a fair amount of professional development for teachers, and other types of professionals in the community. I think that those are things that I have translated more closely to something like this, compared to the research domain or research talks, per se, that I would have done before."



GROUP IDENTITY

What are the learning experiences they derived from the process of developing their convergent project and hackathon theme?

The scholars had several brainstorming sessions to develop projects that reflected their expertise. Though they were initially unsure of how they could bring together their work, the group formed a community, as indicated by their reflections on the collaboration (below).

"So, all of us were brainstorming at the same time from scratch. That was a first for me. And I was a little panicked at first because I thought there was nothing, we can do but it turned out to be, I think, really good. I think Jack* was like really excited and he was like, 'We should send in a grant proposal!'"

"There's no way you can come up with something, you know to accommodate all four of us. So, I guess because my business at least wearables relate to medical applications. The first thing that triggered my mind was maybe we can combine others and that Kacey* is doing wearables and then talking and talking I think we found out the smart way to incorporate Jack's* research so the environment. And at the end, surprisingly, we came up with a really good challenge. So, yeah, I'm really excited."

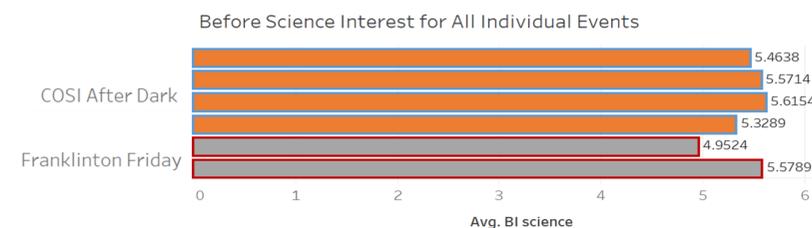


*Names have been anonymized

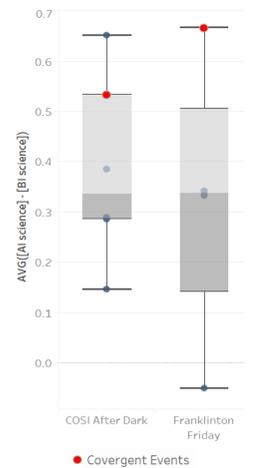
AUDIENCE REACTIONS

Does a collaborative approach enhance the presentation of science in informal setting?

Audiences were surveyed at both the After Dark events at the Center of Science and Industry (COSI) and the Franklinton Friday art walk in the STEAM Factory space. We collected data from 6 events total, with 178 people surveyed at COSI and 100 at Franklinton Friday. Audiences were asked about their interest in science, technology, math, engineering and art, as well as their interactions with our cohort. Overall, both audiences were interested in science before the event (below). After the event audience members increased their interest in science (left). The collaborative events (in red) were at the upper end of the range.



Overall Change between Before and After Science Interest



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