

Appendix: Art Experiences & Advancing Science Literacy

Project: Indianapolis: City as Living Laboratory

NSF Award #DRL-13-23117

March 24, 2018

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NewKnowledge Publication: #NSF.097.115.07-A

Overview: The Appendices below account for all research instruments related to study presented in the I/CaLL *Art Experiences and Advancing Science Literacy* report (NewKnowledge Publication #NSF.097.115.07).

Appendix A: Installation Site Intercept Interview Instrument

Appendix B: Artists-Scientists Walk & Talks Instrument

Appendix C: Post-Performance Event Survey Instrument

Note that researchers did not use an instrument for the fourth aspect of the study, the post-performance event reflection sessions. Instead, they allowed the discussions to be directed by the reflection participants.

Appendix A: Installation Site Intercept Interview Instrument

INSTRUMENT OVERVIEW

Trained research assistants conducted intercept interviews at the five I/CaLL sites to assess visitors' connections to the sites and their knowledge of the science topics addressed by the art installations at each site. Research assistants used this protocol to collect data.

ELIGIBILITY AND CONSENT

[After recruiting someone to participate in the interview, confirm that they are at least 18 years old and currently live in Indianapolis. If yes, proceed to reviewing consent.]

We are conducting five minute interviews for a National Science Foundation-funded project titled Indianapolis/City as Living Laboratory. The purpose of this research is to understand how Indianapolis residents think about the environment and their waterways, and if those perspectives change over time.

We would like to audio record the interview. Neither your name nor any personal identifiers will be recorded and only the research team will have access to these recordings and transcripts. The data will be kept in a locked cabinet at Butler University for a minimum of three years. You can stop the interview at any time.

If is ok with you if I audio record the interview? [If no, say that you will take notes on paper.]

If you have any questions about the research or this survey, I am happy to provide you with more information, including contact information for the research team and the Institutional Review Board under whose auspices this study is conducted.

[If you have permission to audio record, start the recorder and state your name, the date, the site, and the interview number.]

For our records, do I have permission to audio record this interview? [Wait for interviewee to respond before proceeding.]

RESPONSE TO INSTALLATION

As part of the project, several art installations have been set up in Indianapolis and we're interested in knowing what people think of them.

1. Have you viewed any of these installations up close? [if no, invite interviewee to approach and examine the installation]
2. What do you think it's about?
3. We understand from the artist that the theme of the piece is [insert site-specific theme here*]. What does that theme make you think about?
4. How do you think the installation relates to the theme?

*Note about themes: Central Canal = water as a resource; Fall Creek = water and habitat corridors; Pleasant Run = change over time; Pogue's Run = water infrastructure; and White River = water in the atmosphere.

CONNECTIONS TO SITE

We would like to know more about the people who come to this site and might see the installation.

5. About how many miles do you live from this site?
6. How often do you come here in the summer/winter?
7. Do you feel a personal connection to this site?

CONCLUSION

Thank you so much for your time and feedback. It will help us to improve the project.

Appendix B: Artists-Scientists Walk & Talks Instrument

INSTRUMENT OVERVIEW

NewKnowledge researchers facilitated a semi-structured interview referred to as a *Walk & Talk* with two Indianapolis-based scientists and two artists based in the Indianapolis area. Each group visited three of the five I/CaLL waterway installation sites together (Central Canal, Pleasant Run, Pogue's Run) to discuss the art installations and potential for informal science learning at each site. Researchers used this protocol to collect data.

The intention of this "walk & talk" is to gain insight into the professional opinion of the science topics addressed through art. At each site, the researchers will discuss with the scientists, using guiding questions <prompts>, the installation's content, and its potential as an effective medium for informal science learning.

Module 1: Before the site visits

Thank you for taking the time to speak with us today. We would like to start off by introducing ourselves and explaining a little bit about how this afternoon is going to go. <Introduction to NewKnowledge role in project>

We have three hours together this afternoon and will visit three sites. We will be taking notes and audio recording the entire session so that we can refer back to the data later. Everything you say will be anonymized in our report. <Gain consent from participants. If consent for audio recording is denied, only notetaking will occur.>

Your thoughts on the Streamlines/I/CaLL initiative as scientists capable of understanding and interpreting the artworks with a specialist eye for the science concepts are critical to the project. We will begin the semi-structured interview with some questions about how you perceive the relationship between art and science. Then we will visit each of the three sites where there are installations. During the site walk-throughs we will prompt you with more directed questions regarding the artwork's illustration of science concepts. Once we have visited every site, we will conclude with some time debriefing and synthesizing what we have experienced together. It is important to recognize we are not asking you to critique the art, but focus on the knowledge and science concepts displayed in the art.

Let's start with some introductions. Please tell us about yourselves (<prompt> How long have you lived in Indy? What is your scientific field/training? Have you visited any of the five sites previously?)

Q1. How would you describe the relationship between art and science?

<prompt> Can each be a tool to think about the other? For instance, can we use art to illustrate scientific concepts? How about working with science concepts to prompt artistic expression – visual and/or performance? Can art help to prompt science reasoning?

<prompt> Have you previously used art in your work or had professional interaction/collaboration with artists?

Module 2: At each site

Let's walk around the site for a few minutes to get familiar with what's here. I'll also play the music composed for this site.

Q2: Have you ever been here before?

Q3. What are your initial impressions of what you see here?

Q4. What do you think the artist was trying to convey? <Ask first, then reveal the scientific theme/concept> Was it done effectively?

<prompt> Do you recognize the scientific concepts at play in the artwork? Can you identify elements of the artwork that speak to that or other science concepts?

Q5. Does the artwork *accurately* convey its subject matter? Keeping in mind that the work may be an abstract representation, would you say that the physical structure and its decorative elements effectively illustrate the scientific concept?

<prompt> Is accuracy important?

Q6. In your professional opinion, does anything concern you about this installation?

Q7. Has it spurred any connections/thoughts about the science theme that might not occur to you in a lab or classroom?

Module 3: After all site visits

Q8. In thinking about what you've seen today, what are your ideas about using art for informal science learning? Have your ideas changed at all since we first spoke (before the site visits)?

Q9. What would make a project like this more effective (i.e., better able to help people understand science concepts through art)?

Thank you so much for your insight and time this afternoon. We will be in touch with you if we have questions or need to further clarify anything you've said. You're welcome to contact the NewKnowledge project team if you have any additional comments.

Appendix C: Post-Performance Event Survey Instrument

INSTRUMENT OVERVIEW

Researchers collected surveys after a performance event, *Riverrun Revisited*, on September 24, 2016 in Brookside Park, near the Pogue’s Run waterway. The survey questions are as follows.

1. Based on your experience of tonight’s dance performance, how would you complete this sentence? “*One thing I never knew or never realized before I saw this was...*”

2. This event was funded by the National Science Foundation. In your opinion, what was the science topic covered during the event?

3. Please rate your agreement with the following statements about this event.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
This event was effective at communicating about the science topic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This event made me think about the science topic in new ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The science topic is relevant to my daily life.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
This science topic made me think of the waterways in Indianapolis in new ways.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Reflect on your thoughts before you attended this event and now. Please rate your agreement with the following statements.

	Before Event					Now				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I understand the science topic described here.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can explain the science topic described here to another person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like art can be an effective way to communicate about science.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Have you heard of Streamlines?

- Yes
- No

6. Have you closely examined any of these installations around Indianapolis?



- Yes
- No

7. If yes, what do you think it is about?

8. How long have you lived in Indianapolis?

- Less than a year
- 1 to 5 years
- 5 to 10 years
- 10 to 20 years
- More than 20 years
- Prefer not to answer

9. How close do you live to Brookside Park?

- Within 1 mile
- Within 5 miles
- Within 10 miles
- Farther than 10 miles away

10. This project is about the Indianapolis waterways. Do you know what body of water is nearest Brookside Park?

- Yes (please name) _____
- No

11. Where did you hear about today's event? (Select all that apply.)

- Social media
- Flyer
- Word of mouth
- I was passing by and decided to stop
- Other (please specify) _____



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