

PRESENTATION OCTOBER 29, 2015



STEM Learning and Research Center Webinar: Measuring Student Interest and Motivation in Informal Settings

The STELAR Center is a partnership between Education Development Center, Inc. (EDC) and the Goodman Research Group, Inc. (GRG). Funded by the National Science Foundation, the STELAR Center deepens the impact of the national ITEST program through technical support, dissemination, and outreach to better prepare a diverse, skilled, and innovative STEM workforce.



CREATIVE
RESEARCH
AND
EVALUATION



STEM 3D

Integrating Science into Afterschool, Home, and Community

Tara Cox
The Franklin Institute

Sukey Blanc, Ph.D.
Creative Research &
Evaluation

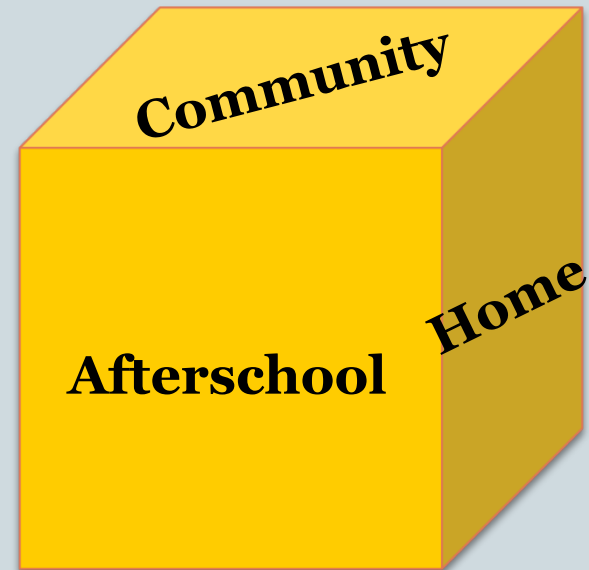
Dale McCreedy, Ph.D.
STEM 3D P.I.
The Franklin Institute



Project Goals



- Increase engagement with STEM across contexts
- Support family-based science learning in diverse, low income communities
- Build capacity of OST programs to increase access to STEM learning and careers



Integrating Science into Afterschool, Home, and Community

Program Focus



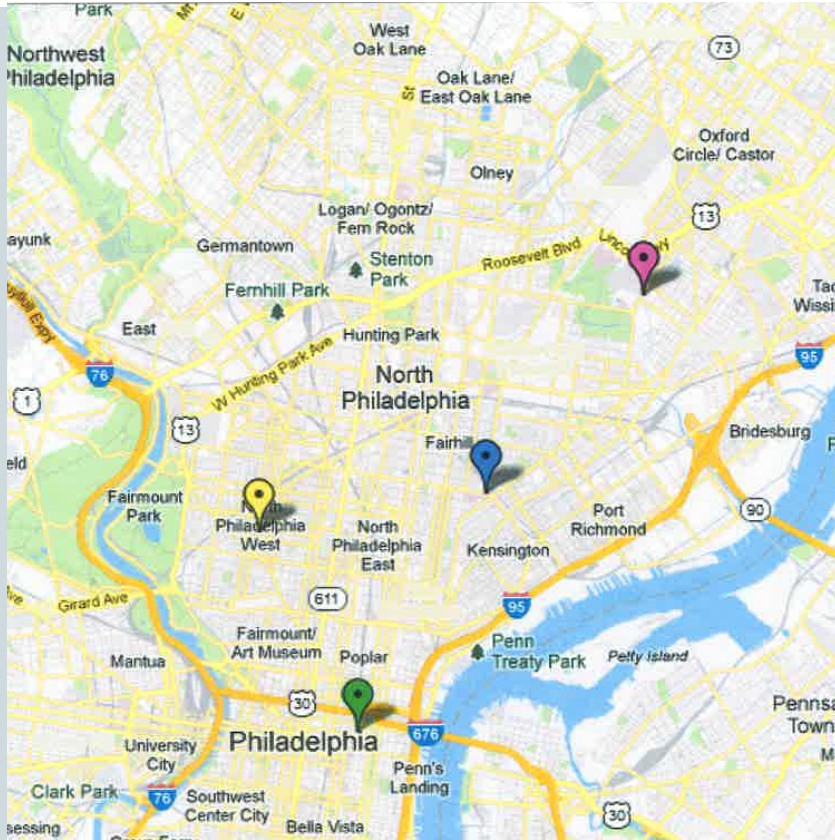
OST staff...


- Attend training at TFI
- Develop and implement STEM units
- Develop STEM family engagement events




STEM  **3D**
Integrating Science into Afterschool, Home, and Community

Participants



 CORA/
Northwood
Academy

 Honickman
Learning
Center

 Visitation
BVM

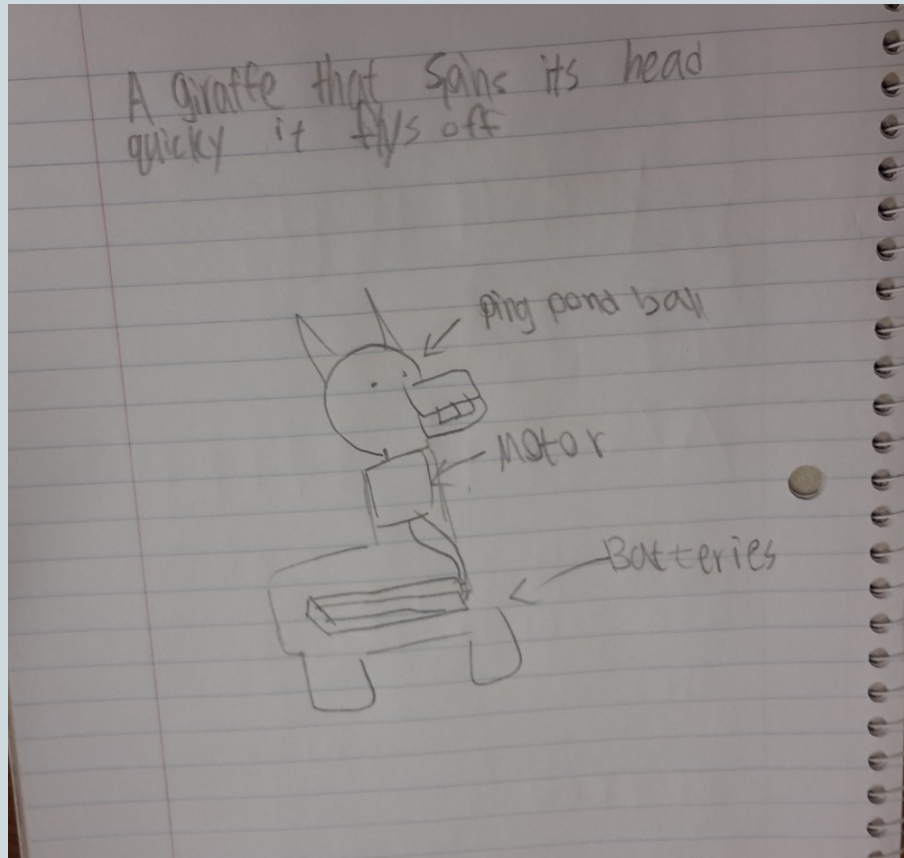
 Children's
Village

Diverse models of afterschool/ OST
programs that serves 3-5th grade

How to measure interest and motivation within these complex environments?



THE
FRANKLIN
INSTITUTE



Understanding STEM 3D



- How do we negotiate the complexity of these environments?
- How do we better understand engagement?
- How do we measure it?
 - ✦ Identify appropriate instruments
 - ✦ Align approach with program activities
 - ✦ Seek IRB approval



Integrating Science into Afterschool, Home, and Community

Measuring Broad Impacts



The PEAR Common Instrument



Today's Date:

Month	Day	Year			

Birthday:

Month	Day	Year			

First Name:

Last Name:

Program Name: _____

Please circle the number that best describes what you think about each statement. Mark only one answer per line please!

Thinking about how you feel today compared to the beginning of this program...	Much Less Now				About the Same				Much More Now
1. Science is something I get excited about.	1	2	3	4	5	6	7		
2. I like to participate in science projects.	1	2	3	4	5	6	7		
3. I like to see how things are made (for example, ice-cream, a TV, an iPhone, energy, etc).	1	2	3	4	5	6	7		
4. I am curious to learn more about science, computers or technology.	1	2	3	4	5	6	7		
5. I want to understand science (for example, to know how computers work, how rain forms, or how airplanes fly).	1	2	3	4	5	6	7		
6. I get excited about learning about new discoveries or inventions.	1	2	3	4	5	6	7		
7. I pay attention when people talk about recycling to protect our environment.	1	2	3	4	5	6	7		
8. I am curious to learn more about cars that run on electricity.	1	2	3	4	5	6	7		
9. I would like to have a science or computer job in the future.	1	2	3	4	5	6	7		
10. I like online games or computer programs that teach me about science.	1	2	3	4	5	6	7		

Less is More



The PEAR Common Instrument

- Age appropriate
- Validated survey
- Short (10 item)
- Designed to be administered by sites themselves
- Provides broad-brush picture of engagement and interest in STEM

http://www.pearweb.org/tools_commoninstrument.html

Systematic Observation



- Dimensions of Success Observation Tool
- More information at www.pearweb.org



Exploratory Research



What does STEM career interest look like among 3rd - 5th graders?

K	W	L
<ul style="list-style-type: none">- People make structures- Construction workers make buildings- Architects make blueprints- Sometimes roads are closed when a structure is built because there could be falling objects- Special tools are used like cranes, trucks, wrecking balls, bulldozers	<ul style="list-style-type: none">- Do they always cover the building with newspapers?- Could they build a building with Legos in a few days?- What is the hardest material used to make a building?- What kind of blueprints do they use?- Is there a shoe maker?- How much steel is used in a tall building?- How much money does it take to make a structure?- How are buildings made really tall?	<ul style="list-style-type: none">- A building will collapse if not strong- A natural disaster can blow a building away- Some structures are made to move with our earth's crust.- Buildings need support beams to stay from falling down.- There are different types of bridges- Benjamin Franklin's bridge is a suspension bridge.- Most buildings there being built underground

What do children say?

What does their work show?

How do we document change?

Emerging Results



- **Staff and researcher observations indicate classroom interest and engagement.**
- **Preliminary data suggest statistically significant change in STEM interest and engagement.**

Next Steps



- **Finalize IRB**
- **Data collection and analysis**
 - **Audio tape student talk**
 - **Collect artifacts**
 - **Continue to use PEAR Common Instrument & DOS Observation Tool**



Integrating Science into Afterschool, Home, and Community



The Franklin Institute and Creative Research and Evaluation thank our site partners!

tcox@fi.edu

sblanc@creative-evaluations.com



This material is based upon work supported, in part, by the National Science Foundation under Grant DRL #0714658. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.