Building evaluation capacity in Informal Science Education through strategic collaboration

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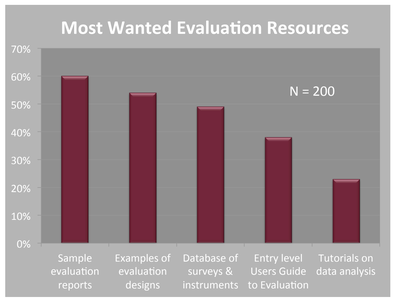
Abstract

*A major goal of Informal Science Education (ISE) is to address and improve upon the lack of standardized tools and strategies to effectively measure outcomes and impacts across programs. Through a dynamic collaboration between the Cornell Lab of Ornithology's DEVISE project and Harvard Medical School's Program in Education, Afterschool, and Resiliency (PEAR), we intend to test and validate existing, new, or modified instruments in evaluations of projects that engage the public in scientific research[1] (i.e., "**citizen science**") and in **afterschool settings**[2]. Results from the evaluations will be made available via an online toolkit and searchable database of valid and reliable assessment tools. Together, the collaboration will develop a common framework that evaluators, practitioners, and researchers can use to build customizable evaluation designs using generalizable tools and instruments. With widespread adoption of these tools, we envision future cross-programmatic analyses of ISE project outcomes.*

Priority Needs for Evaluation of Informal Science Education Programs

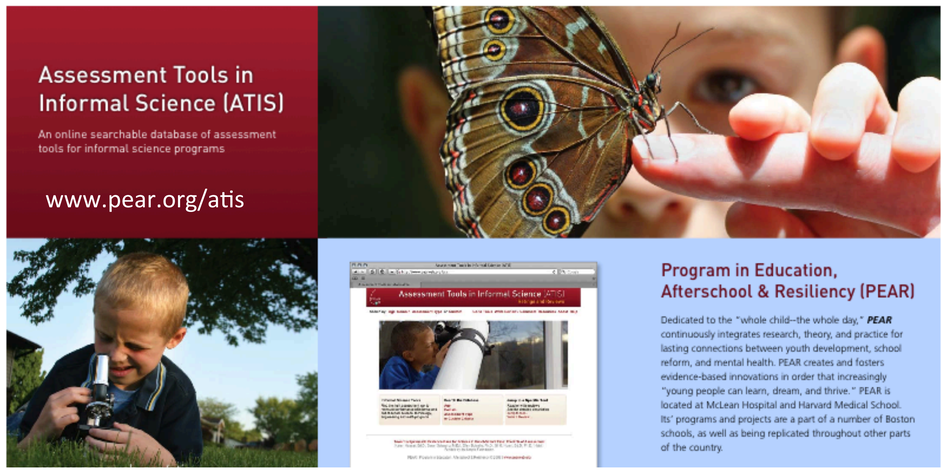
- Increase the number and quality of evaluations
- Develop more sensitive measures
- Analyze and organize existing tools
- Develop brief, reliable, and validated scales to assess different aspects of ISE programs
- Gather baseline information throughout the ISE field
- Increase adoption of tools by diverse programs to facilitate cross-programmatic analyses
- Provide support and technical assistance for program leaders new to evaluation



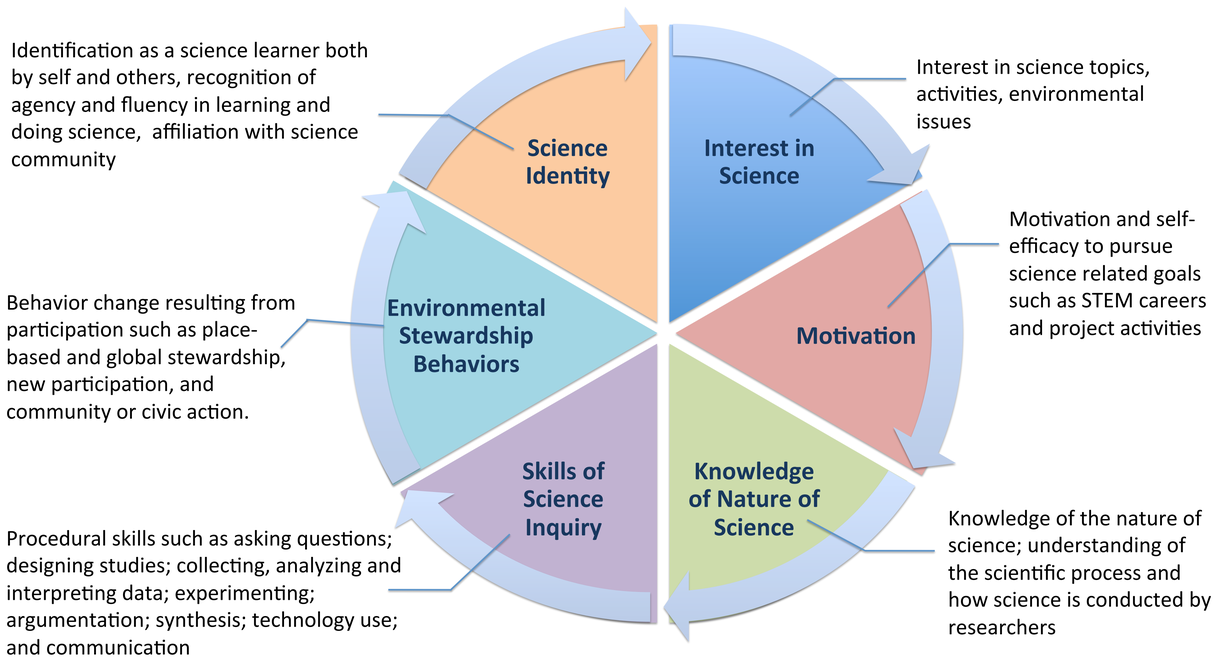
Goals for PEAR and DEVISE Collaboration

The collaboration between PEAR and DEVISE (represented below) will: 1) build a searchable online database of tested scales and tools; 2) develop a common framework for evaluating impacts and outcomes in ISE projects; 3) test and validate scales through evaluations of citizen science and afterschool programs; and 4) develop a "toolkit" where practitioners can access evaluation tools, strategies, resources, and technical assistance.

1 Create Online Database of Assessment Tools in Informal Science (ATIS)



2 Operationalize a Framework for Evaluating Outcomes of ISE Projects[3-5]



3 Test and validate scales by evaluating diverse projects and populations

- Determine goals, objectives, & indicators for eBird, Water Monitoring Groups, CUBS, and BirdSleuth
- Draft logic models and evaluation plans
- Pilot-test generalizable scales across diverse projects and populations
- Conduct situated evaluations, disseminate findings
- Refine assessment tools as needed

eBird

BirdSleuth

AVIARM

Alliance for Aquatic Resource Monitoring

4 Develop Online Toolkit for Practitioners and Evaluators

Impact Category and Subcategory	Sample Goal	Sample Learning Objective	Potential Indicators
Awareness, knowledge, and/or understanding of [1]			
Science content	• Participation in program will lead to increased knowledge about citizen science and its value	• Participants will have increased awareness of the scientific contributions of citizen science projects	• Participants can describe how the data they collect will be used by scientists
Science process	• Participation will lead to increased knowledge about science processes	• Participants will learn how to ask a research question of interest	• Participants demonstrate ability to design a valid research question
Nature of science			
Science careers			
Engagement or interest in [2]			
Project/activity/ content	• Participation in program will result in increased engagement in science issues	• Participants will increase interest in a specific science topic	• Comparison of interest in content before and after participation
Science process			
Scientific community	• Participation in program will lead to increased engagement with science and nature	• Participants spend more time observing nature and contributing to science	• Duration, frequency, and intensity of participation, intent to participate again
Nature/environment			
Skills related to [3]			
Asking questions			
Designing studies			
Collecting data	• Participation in program will improve participants' data collection and interpretation skills	• Improved abilities to identify unfamiliar species and collect accurate data	• Improved identification of species before and after participation
Submitting data			
Analyzing data			
Interpreting data			
Evaluating results			
Using technology	• Participation will result in the development of new technological skills	• Participants will increase their use and ability to use GPS technology	• Ability to appropriately use a GPS unit as part of a monitoring protocol

- Sample goals, objectives, indicators
- User's Guide to Evaluation
- Database of tested scales
- Tutorials and webinars
- Research on learning
- Technical assistance
- Professional development opportunities
- Case study highlights

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Literature cited:

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