Examining engagement in citizen science

Tina Phillips, Cornell Lab of Ornithology
tina.phillips@cornell.edu

Heidi Ballard, UC Davis
Rick Bonney, Cornell Lab of Ornithology

birds.cornell.edu

A membership institution interpreting and conserving the earth's biological diversity through research, education, and citizen science focused on birds

Citizen Science

Also Known As …

participatory action research

Community-based monitoring

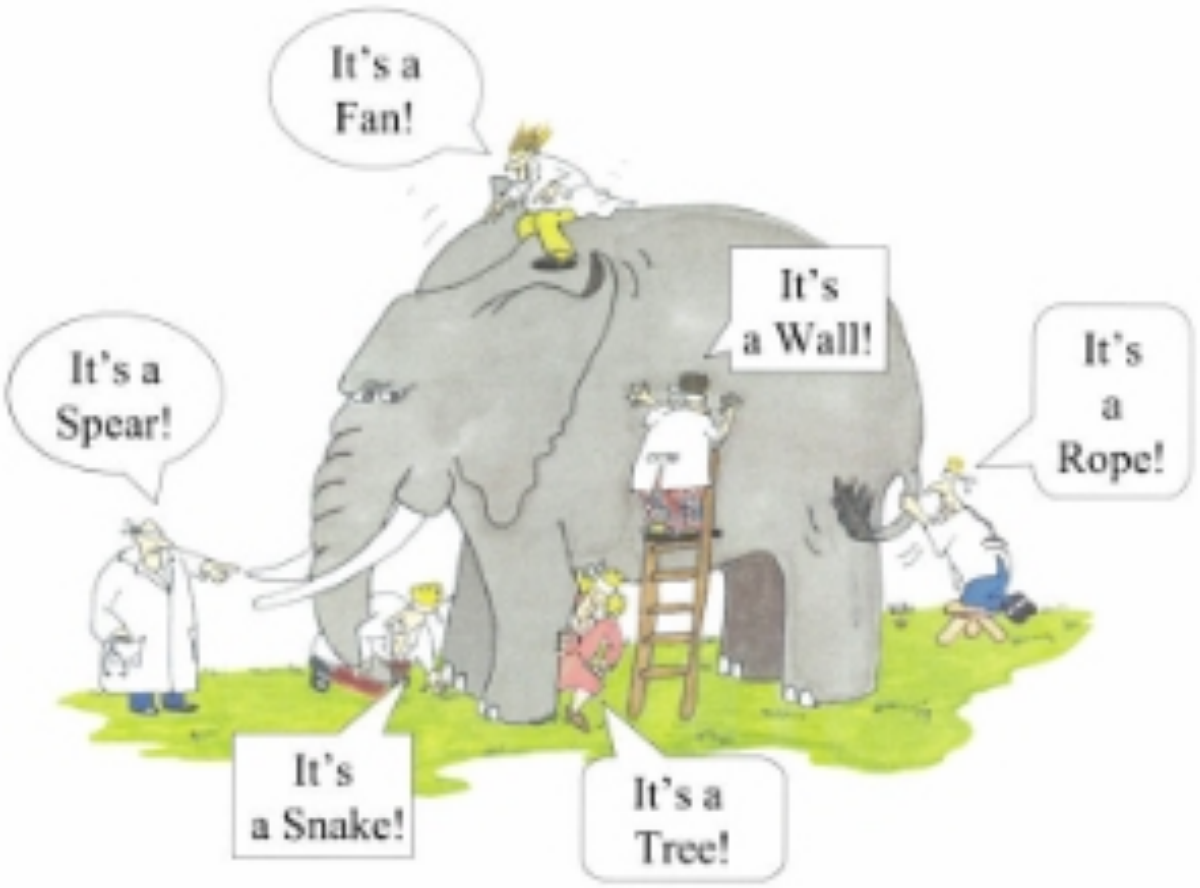
community science

civic science

volunteer monitoring

local and traditional knowledge

public participation in scientific research


It's a Fan!
It's a Spear!
It's a Wall!
It's a Rope!
It's a Snake!
It's a Tree!

Citizen Science

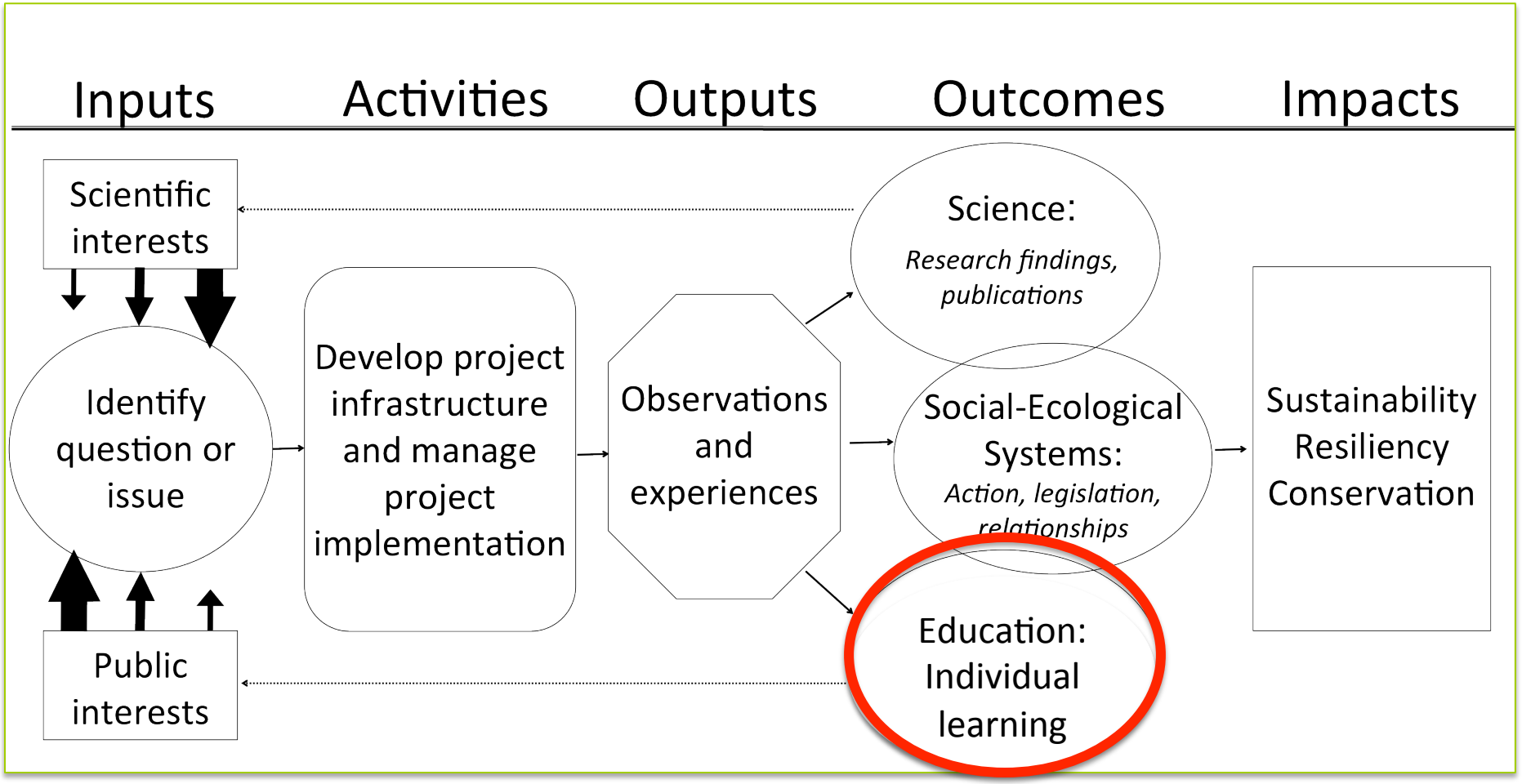
Members of the public and professional scientists engaged in collaborative research to generate new science-based knowledge

CS/PPSR models:

	Contributory	Collaborative	Co-Created
Define a question/issue	☐	☐	☑
Gather information	☐	☐	☑
Develop explanations	☐	☑	☑
Design data collection methods	☐	☑	☑
Collect samples	☑	☑	☑
Analyze samples	☑	☑	☑
Analyze data	☐	☑	☑
Interpret data/conclude	☐	☐	☑
Disseminate conclusions	☐	☐	☑
Discuss results/inquire further	☐	☐	☑

Bonney, R., Ballard, H., Jordan, R., McCallie, E., Phillips, T., Shirk, J., and Wilderman, C. 2009. Public Participation in Scientific Research: Defining the Field and Assessing its Potential for Informal Science Education. **CAISE Inquiry Group Report**

Operational Framework



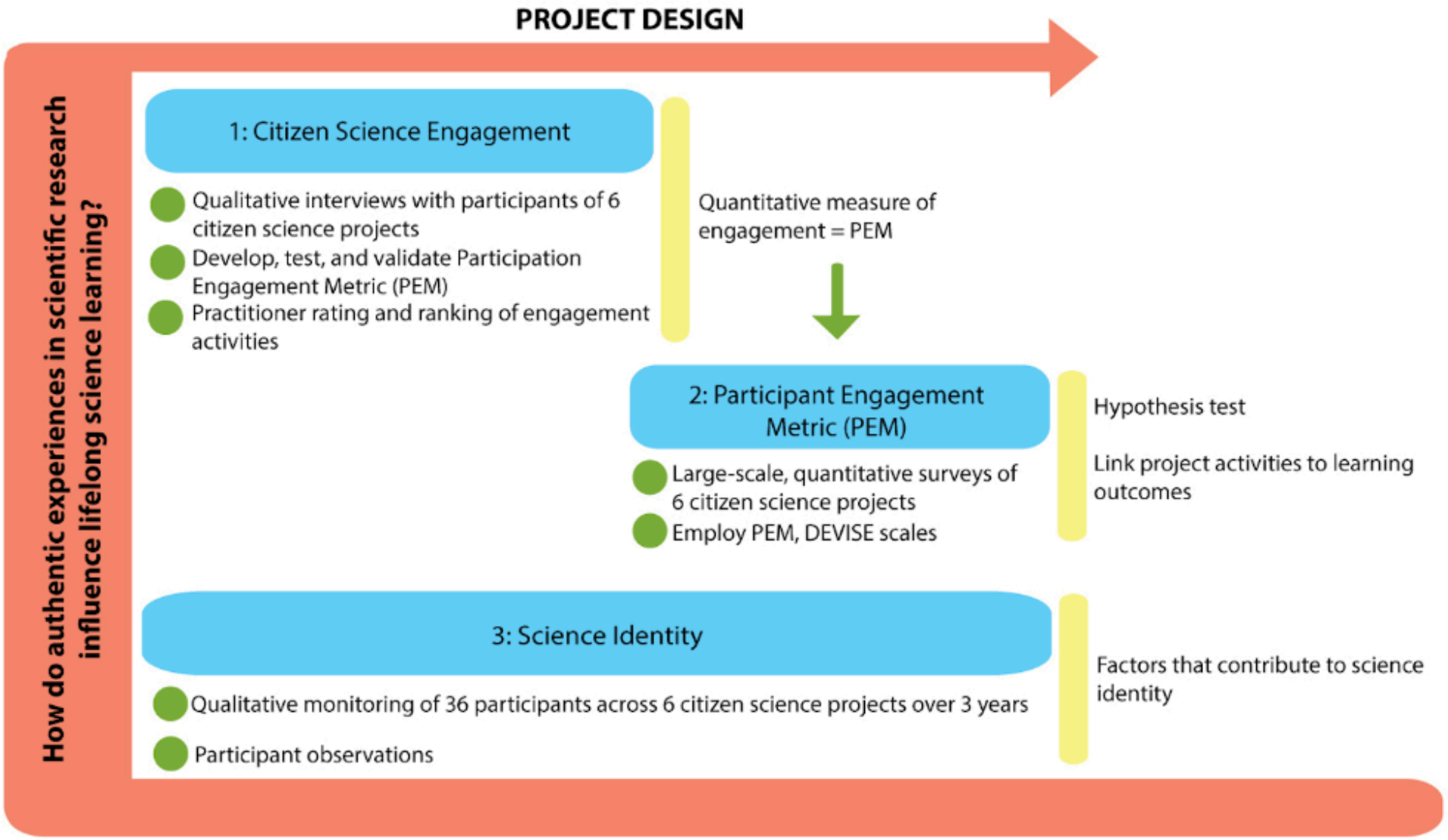
Shirk et al. 2012

Exploring Engagement and Science Identity through Participation (EESIP)

Engagement → Learning → Identity

- Q1: *What are the dimensions of citizen science engagement and how can we measure these dimensions across different types of projects?*
- *Q2: What is the relationship between participant engagement and science learning outcomes?*
- *Q3: How does degree and quality of citizen science participation develop and/or reinforce science identity in participants?*

Mixed Methods Research



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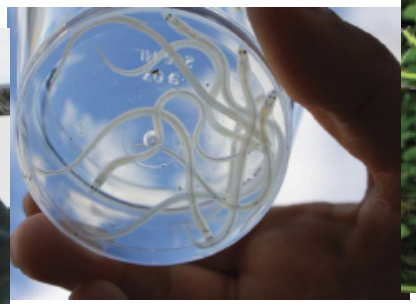
EESIP Project Partners

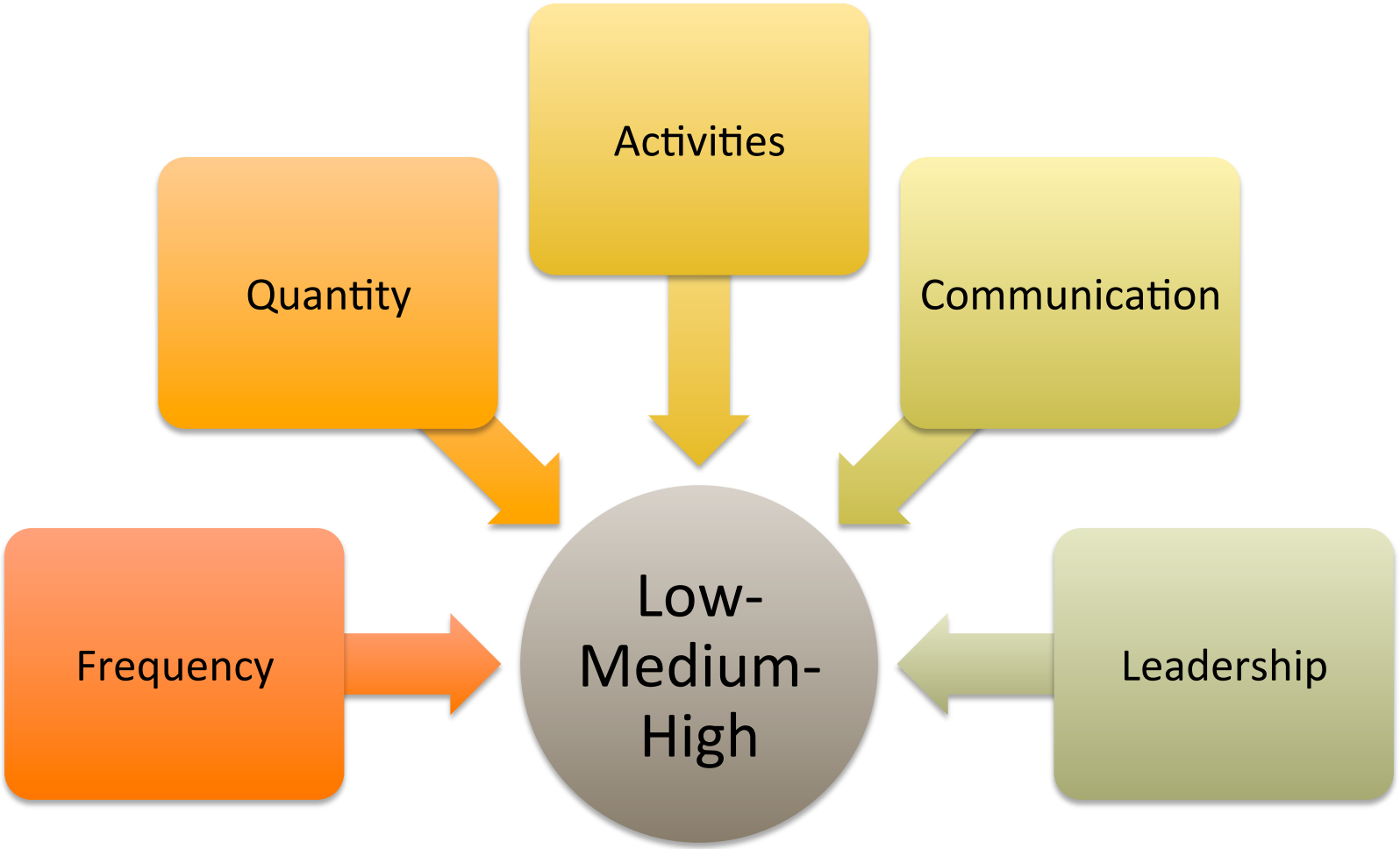
- *Monarch Larvae Monitoring Project (Contributory)*
- *NestWatch (Contributory)*
- *Hudson River Estuary Program (Collaborative)*
- *CoCoRaHS (Collaborative)*
- *ALLARM/Streamkeepers (Co-created)*
- *GCM Bucket Brigades (Co-created)*



Q 1. Process and Methodology

- Literature review on engagement - K-12, organizational labor, informal science learning
- Requested Low-Medium-High definitions from project leaders
- Development of structured interview protocol
- Feedback on interview protocol, mock interviews
- Project leader recruitment for low-medium-high engagers
- 83 interviews (1-2 hours) conducted between April - August

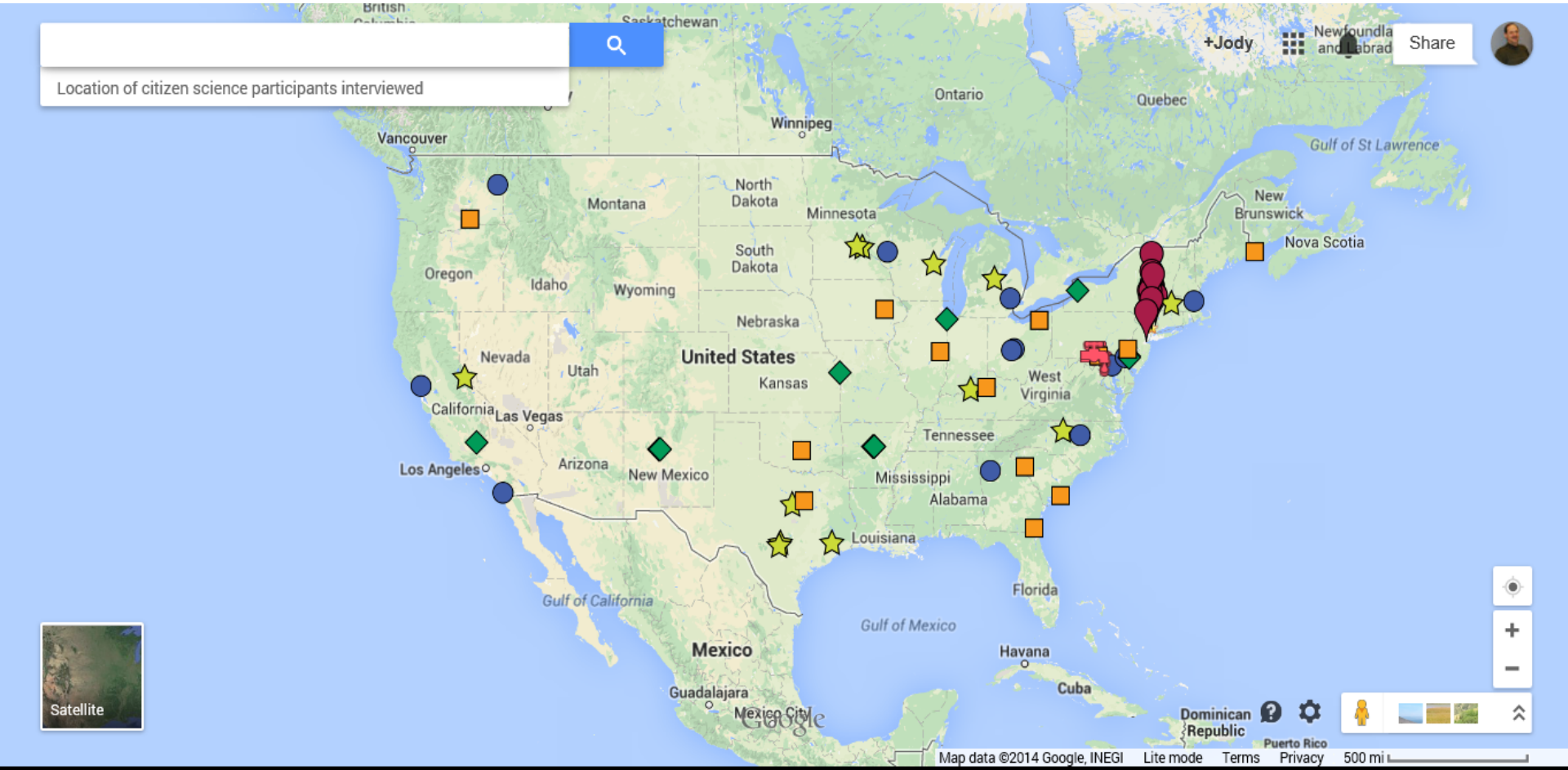
Project leader Definitions



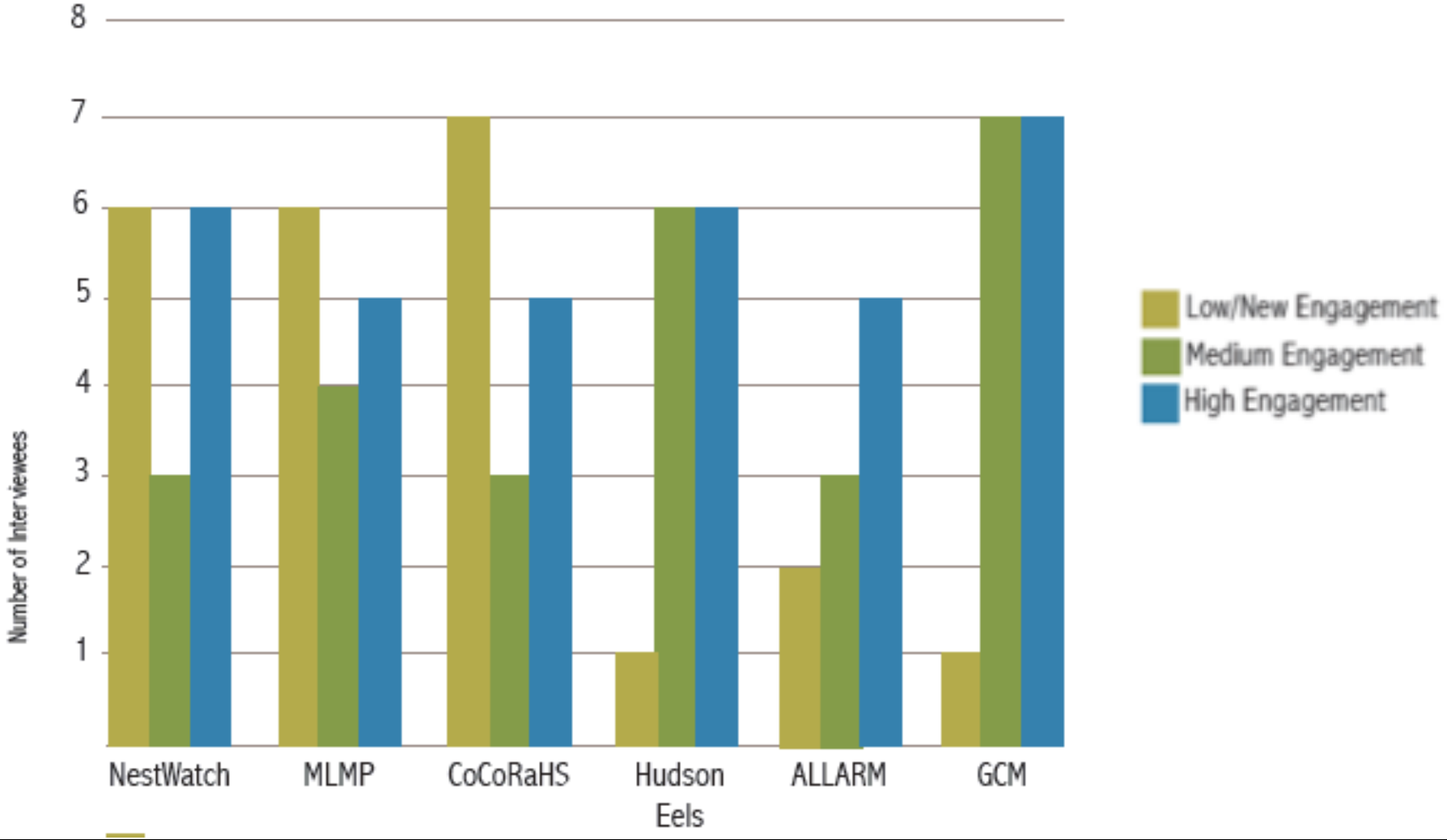
Interview Protocol

- What are the different kinds of activities people engage in when they participate in citizen science, across different kinds of projects, and models?
- Why do people become involved in the different projects (motivation)?
- How does motivation influence engagement?
- What are barriers to increasing engagement?
- What early relationships can we see between science learning outcomes and engagement?

Distribution of Interviewees



Interviews completed by Project and Engagement Level



Overarching Themes

- Vast majority come in with a high interest in science and/or nature
- Lower engagers tend to feel less connected to project, some crave more social outlets
- Many are seen as science/nature experts by friend and family, although they don't claim that title themselves
- Across the board, even the newbies have a strong understanding of citizen science and their role in it.
- For the most part they all feel like what they are doing is part of science, contributing to something bigger
- For some projects (NW, MLMP, CoCoRHaS), the projects help to maintain/support science interests they already had

Preliminary Participant Engagement Framework

- Data collection
- Submission
- Data exploration/ analysis
- Role expansion

- Interest
- Commitment
- Motivation
- Efficacy

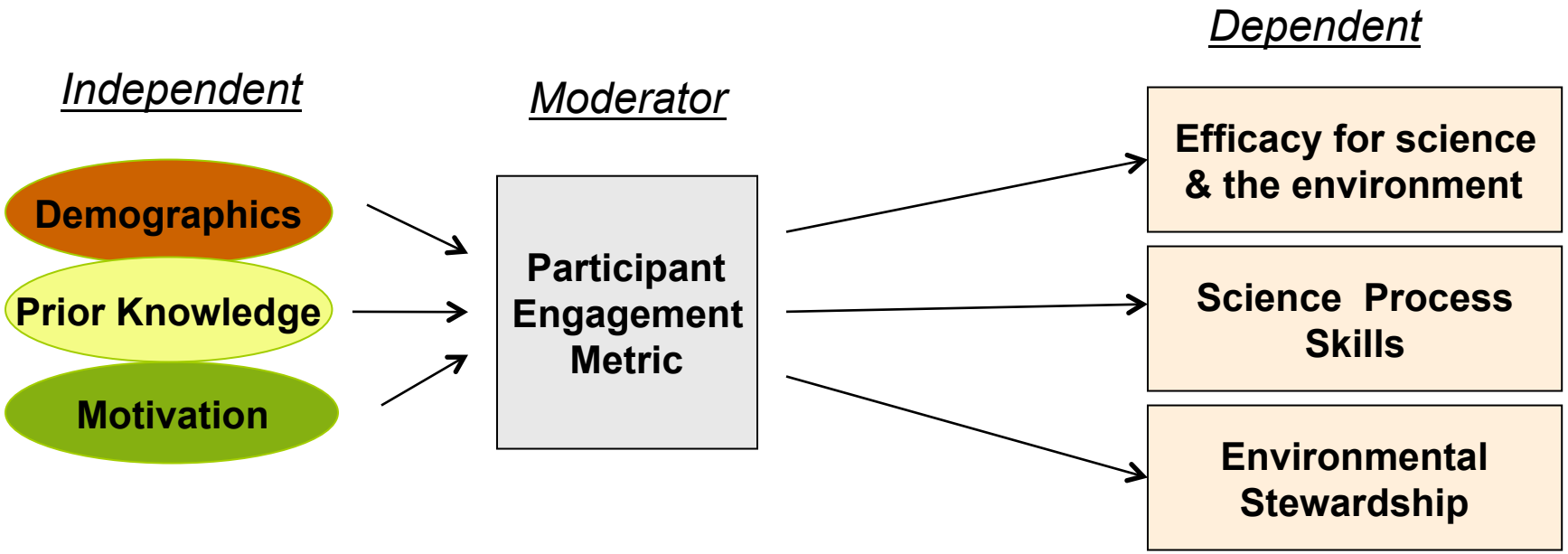
- Shared knowledge
- Mutual resources
- Mutual accountability

- Pre-existing knowledge
- New knowledge
- New skills
- Science process

Hypothesis Testing via the PEM

Q2: What is the relationship between participant engagement and science learning outcomes?

- PEM is "a hypothesized moderator" that can affect the strength of the relationship.



Questions?

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