

EMBEDDED ASSESSMENT FOR CITIZEN SCIENCE (EA4CS)

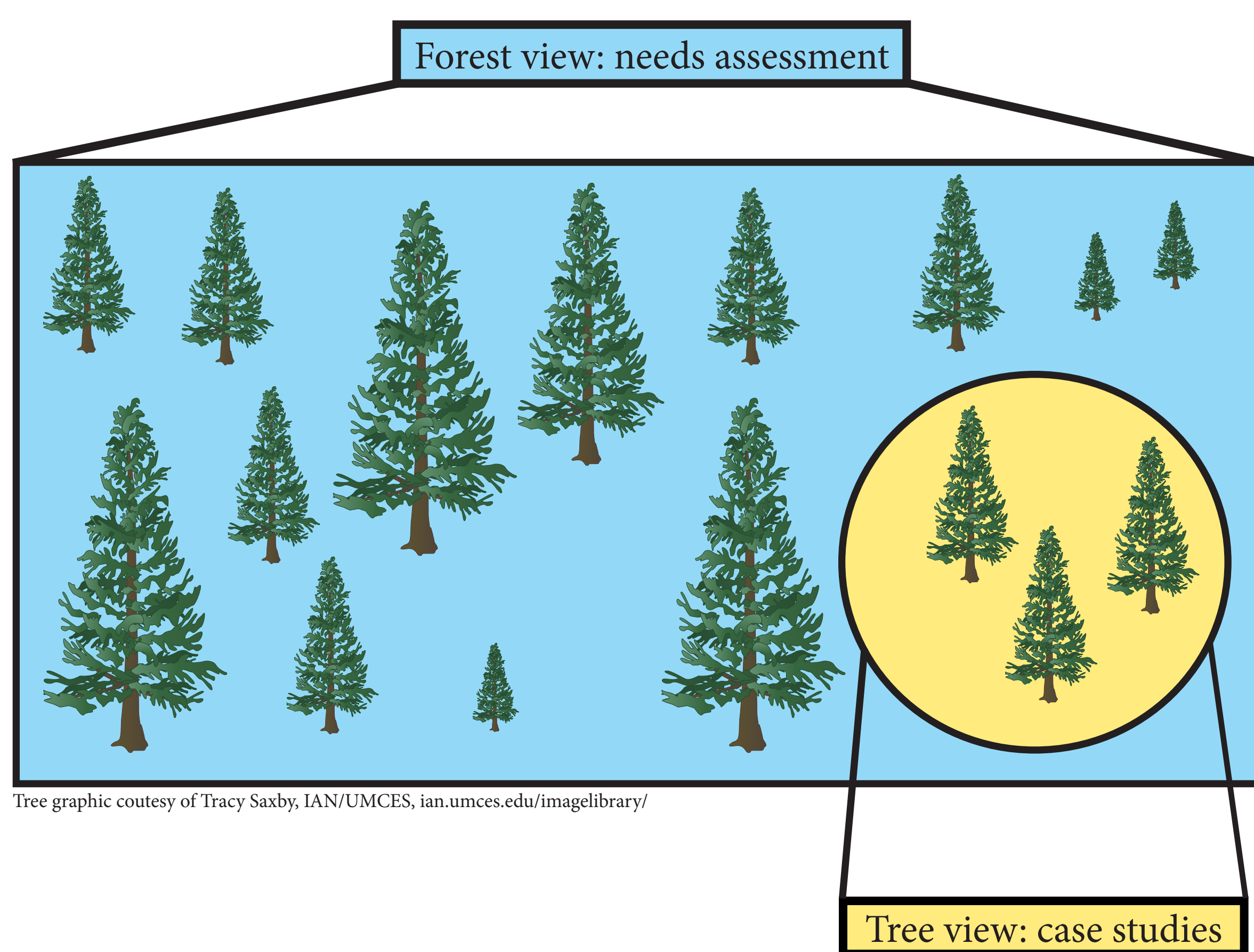
SUMMARY

EA4CS is an AISL Pathways project that explores the use of embedded assessment (EA) to measure participant science inquiry skill development within the context of citizen science (CS) projects. This proof-of-concept project consists of two concurrent strategies to study and enhance the use of EA in these informal-science-learning settings. With a “forest view,” we are scanning the CS community to understand assessment of targeted science inquiry skills. With our “tree view,” we are conducting case studies to develop, pilot, and analyze EAs of inquiry skills across three diverse CS projects, including documenting the process. An advisory committee is providing guidance and feedback on the process and products.

Our project will result in the following:

- Deeper understanding of relevant science inquiry skills and issues around assessment of these skills within environmental-science-based CS
- Sample EA tools aligned with a subset of specific inquiry skills
- Description of the process to develop these skill-based EA tools

Our two professional target audiences are (1) CS leaders, evaluators, and researchers and (2) the informal science learning community.



RESEARCH QUESTIONS

- What are common and unique CS science-inquiry skills?
- How are these skills measured to document project impact?
- What are opportunities and challenges for EA of these skills?
- How does EA help CS leaders better understand project impacts on these skills?

PARTNERS

EA4CS project co-PIs

- Cathlyn Stylinski (University of Maryland Center for Environmental Science)
- Rachel Becker-Klein (PEER Associates)
- Karen Peterman (Karen Peterman Consulting)

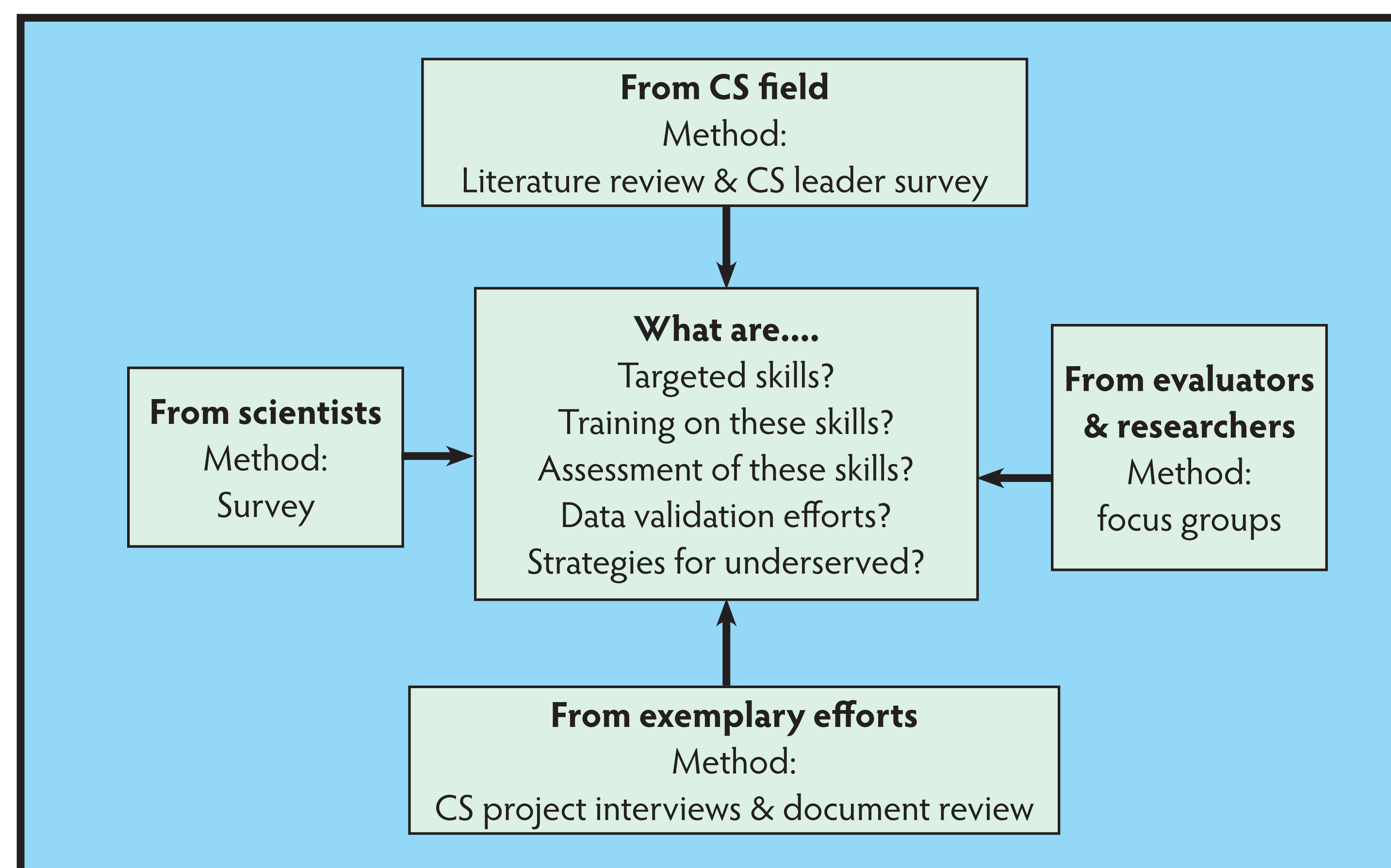
EA4CS project consultants

- Amy Grack Nelson (Science Museum of Minnesota)
- Tina Phillips (Cornell University)

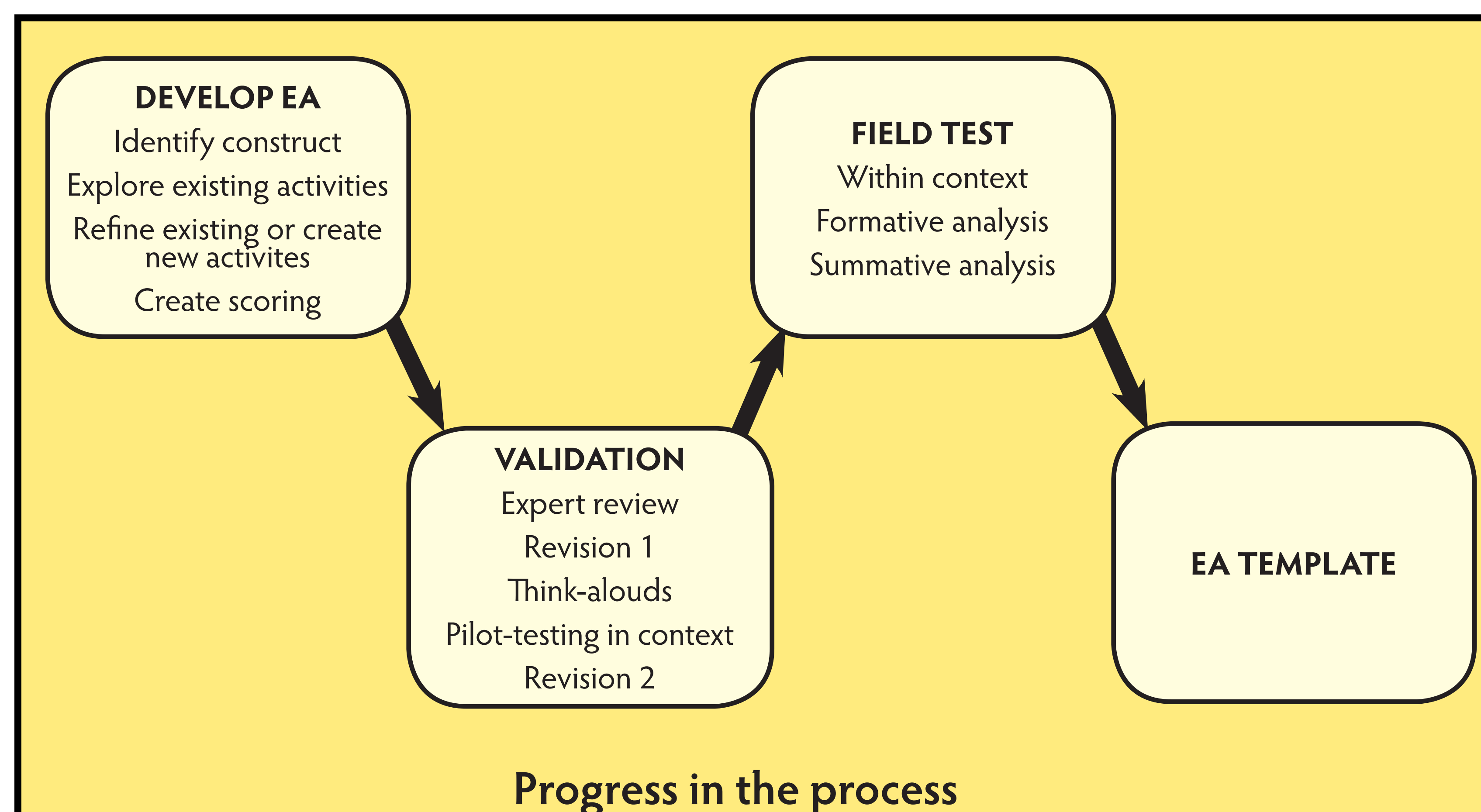
EA4CS evaluation/advisory committee

- Martin Storksdieck (Oregon State University)
- Leslie Goodyear (Education Development Center)
- Chris Lysy (Westat)

METHODS - FOREST VIEW



METHODS - TREE VIEW



Description: Inquiry-based out-of-school science discovery program for students grades 4-8 in Raleigh, NC

Construct: Precision in data collection

Measure: Field-based dragonfly counts are compared to those of a peer who observed the same area



Description: Out-of-school-time program that works with underserved youth ages 6-18 in Milwaukee, WI

Construct: Creating/interpreting graphs, and formulating conclusions

Measure: A rubric is used to score a 30-minute inquiry activity that includes graphing and describing data and conclusions

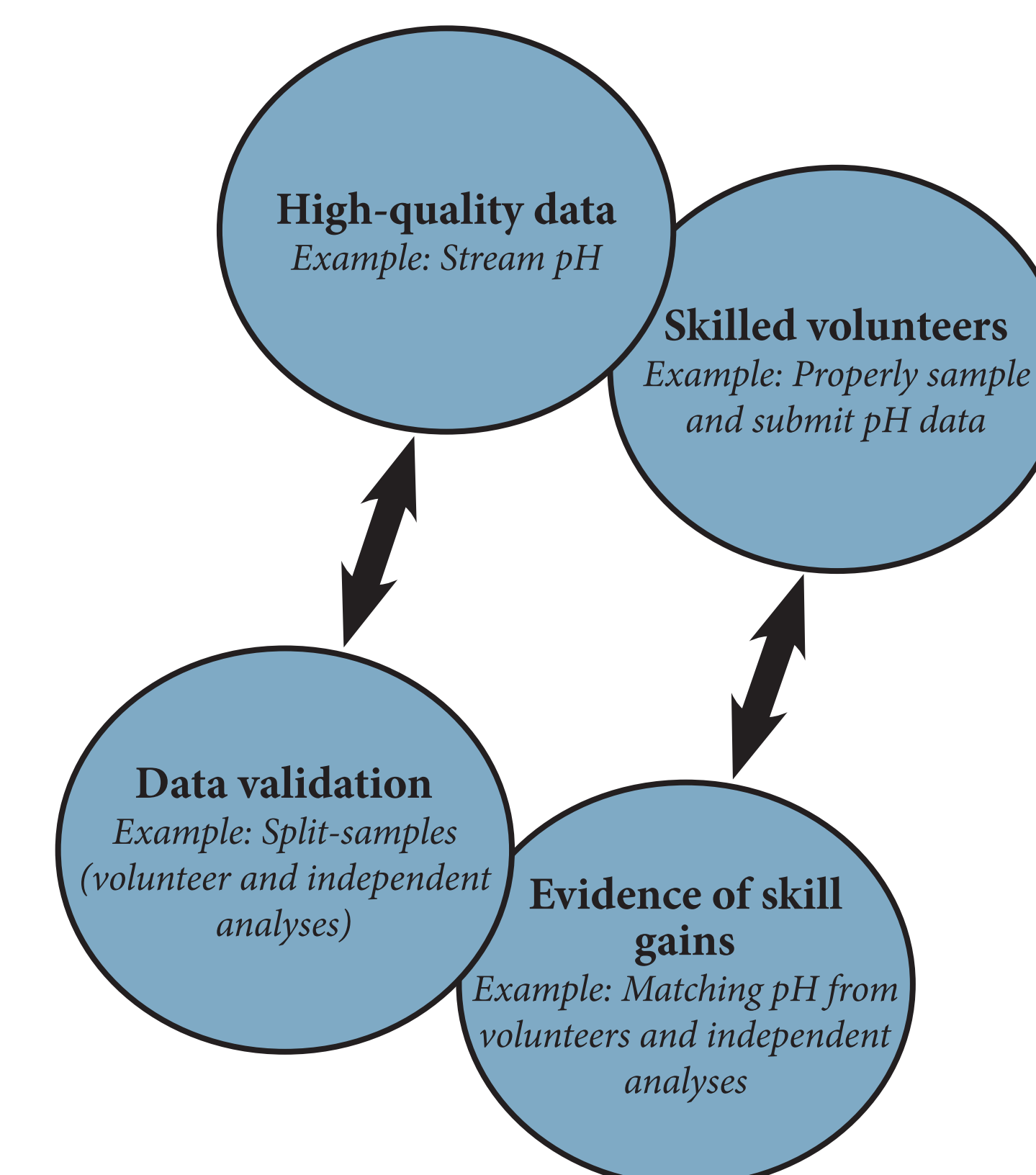
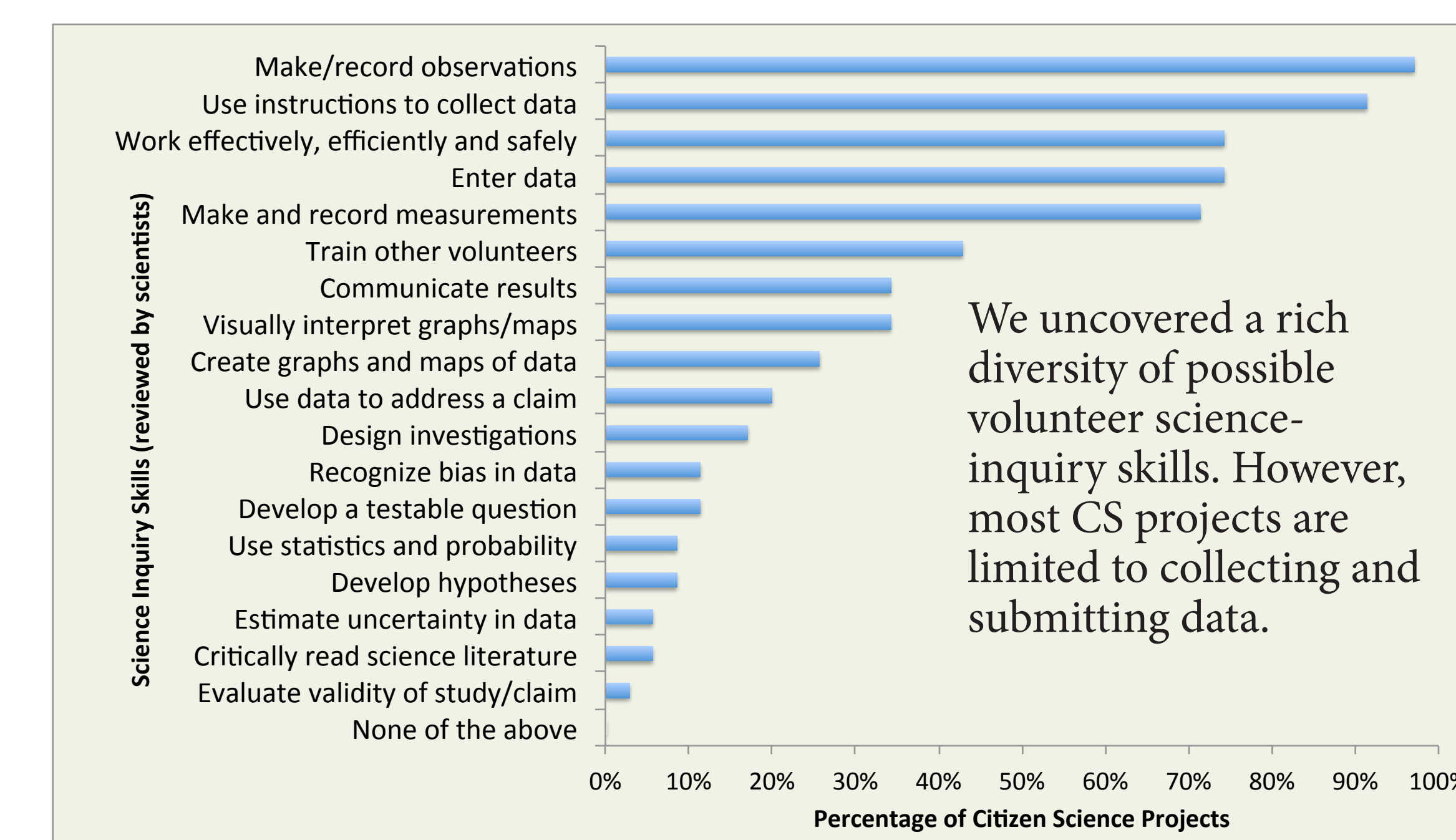


Description: National, online phenology program in which participants regularly record observation of plants and animals to generate long-term datasets

Construct: Paying close attention

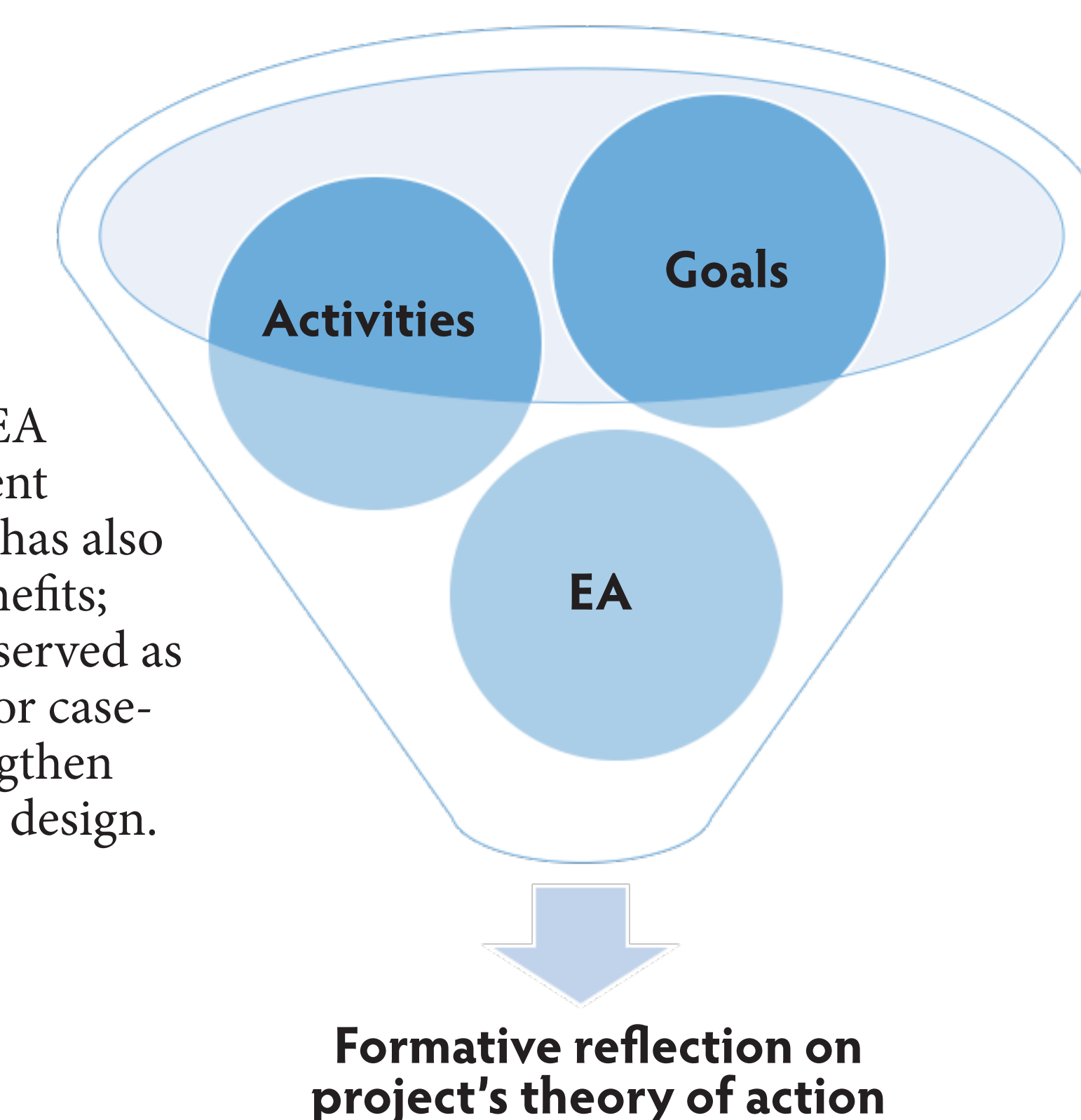
Measure: A rubric is used to score an observation and journaling activity of selected plant and animal species

SOME RESULT AND INSIGHTS



High-quality data requires skilled volunteers, and efforts to validate data are related to skill gain assessments. Thus, EA might be integrated into data validation efforts.

The primary benefit of the EA process will be the assessment itself. However, the process has also produced unanticipated benefits; that is, developing EAs has served as a valuable reflection point for case-study sites, which will strengthen both project and evaluation design.



SOME CHALLENGES

- Most CS projects do not assess volunteers' skill gains, and some have not articulated targeted skills or strategies to address these skills.
- CS projects that do not prioritize high-quality data may define science inquiry skills differently than projects that do prioritize high-quality data (e.g., emphasizing knowledge of skills over ability to perform skills).
- CS projects vary dramatically, and thus it is challenging to determine a one-size-fits-all EA solution.
- For this exploratory grant, we provided EAs by adapting existing activities of pilot CS projects; we have not explored the process of creating a unique EA measure.

