

Perspectives on a researcher-practitioner partnership: our role as practitioner researchers studying youth learning through participation in NHM-led citizen science

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PROJECT OVERVIEW

Community and Citizen Science with Natural History Museums

Natural History Museums (NHMs) are important for connecting science to the public through informal science education, youth engagement, and public outreach. NHMs also carry out research in order to understand the natural world, and they are uniquely positioned to communicate their research to a large, widespread audience. Recently NHMs have increasingly utilized community and citizen science (CCS) programs to accomplish these dual goals of research and public education; however, there has been a historical gap between the findings from learning research and actual program design, including programs utilizing CCS.



To address this gap, the Learning and Environmental science Agency Research Network for Citizen Science (LEARN CitSci) brings together learning researchers and CCS practitioners from three universities and three NHMs. The goal of this collaboration is to understand the impact of CCS projects on young participants who are engaged in hands-on, outdoor activities in both short term (one-time event) and ongoing (multiple events CCS programs, as well as their online participation through iNaturalist and Zooniverse projects).

Research Questions

1. What is the nature of the learning environments, and what activities do youth engage in when participating in NHM-led CCS?
2. To what extent do youth develop the three components of Environmental Science Agency (ESA) through participation?
 - a) Deepening understanding of environmental science content and practice
 - b) Identifying an area of their own expertise in

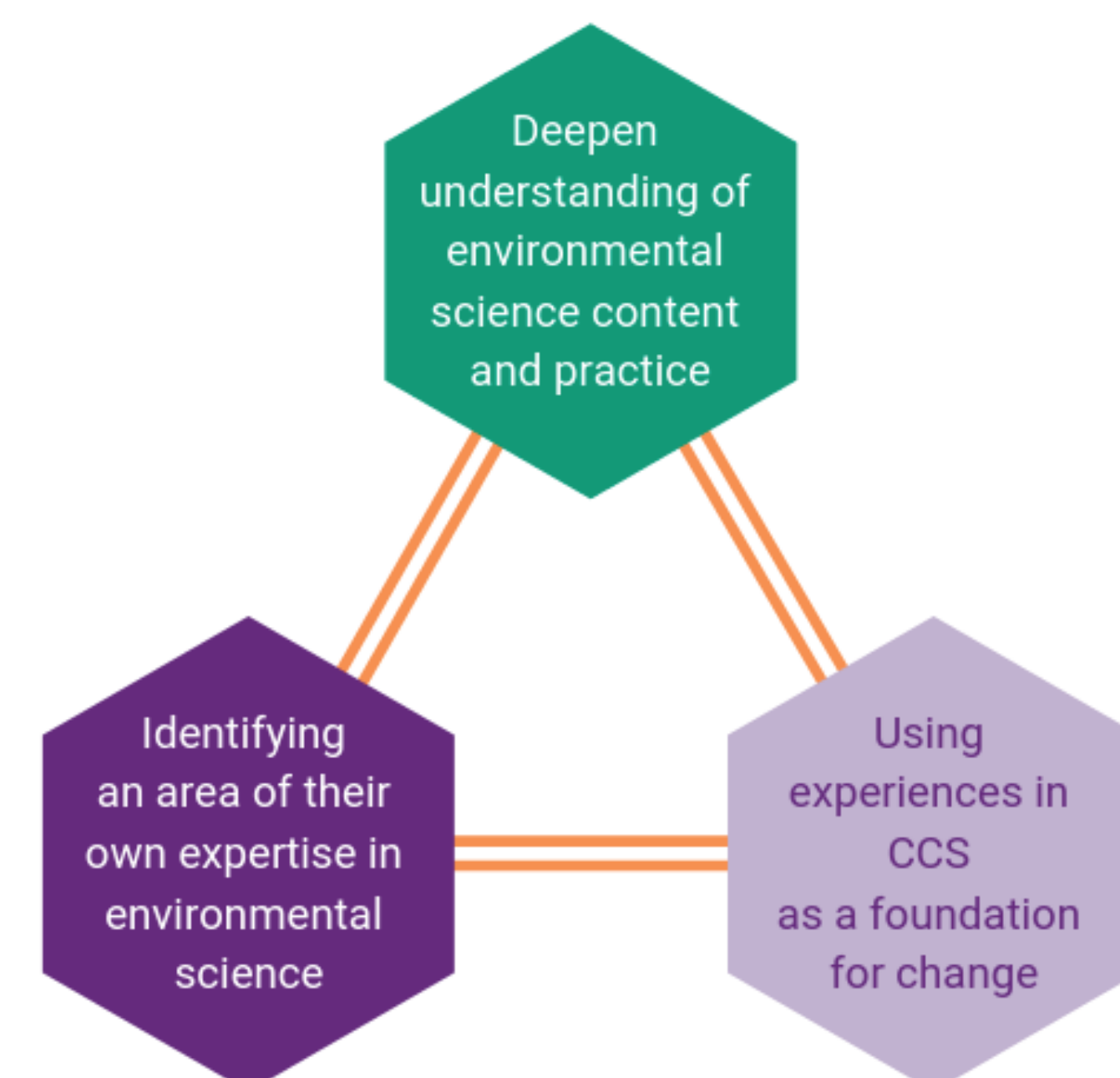
- environmental science
- a) Using experiences in CCS as a foundation for change
 - b) Identifying an area of their own expertise in environmental science
 3. What program features and setting in NHM-led CCS foster the three science learning outcomes (a, b and c)?

Research Methods

We use a mixed-methods approach to characterize how young people, aged 5-19 years, develop knowledge, practices, and agency with environmental science through their participation in NHM-led CCS in the following three settings:

1. Short-term events (e.g. BioBlitzes)
2. Ongoing monitoring projects (e.g. after-school and community programs)
3. Online or mobile-enabled crowdsourcing projects (Zooniverse and iNaturalist)

- Taking ethnographic field notes of focal youth
- “Walk and talk” interviews with focal youth during programs
- Pre- & follow up-surveys of youth participants
- Post-program interviews with focal youth
- Video diaries
- Post-program interviews with program designers & facilitators



OUR ROLE AS PRACTITIONER RESEARCHERS

Research

- We carry out field-based and in-person data collection in collaboration with education researchers during CCS programming, using all methods listed opposite.
- Contribute to data analysis (through analytical memos) to identify evidence for development of environmental science agency (ESA) within each program setting.

Each museum has one full-time LEARN CitSci project coordination officer (PCO), who acts as a practitioner researcher.



Practice

With previous experience as environmental and museum science educators, we work alongside CCS program managers at each Natural History Museum:

- Work to attract and engage youth audiences in CCS programs, focusing outreach to young people from underrepresented groups in each museum’s local community.
- In year 3 of this research, we will contribute to adapting and developing CCS programming in order to foster ESA development, based on findings from years 1 and 2.

Challenges

Novice researchers

None of us has a formal background in educational research and thus have limited theoretical knowledge.

Cross-setting and cross-continent consistency

Developing a shared understanding of language and theory from both a country- and setting-specific context. Informal learning environment.

Impartiality as researchers while being embedded in programming

One of the most challenging practicalities of the project is finding a reasonable solution between the ostensibly opposing aims of an impartial learning researcher and a member of the museum programming staff.

Participation/Partnerships

We are developing partnerships with youth-focused, community-based organizations in collaboration with NHM CCS program managers:

- Work with facilitators and young people to center youth voices throughout the research.
- We will work with community-based partner organizations to adapt existing CCS programming and co-develop new projects.

Lessons Learned

We began working on this project with 2–4 months of training from the project’s two postdoctoral researchers on subjects such as design-based research, Critical Science Agency (Basu and Barton, 2009) and data collection methodologies. We are continually trained as new instruments are developed, working with one another and postdoctoral researchers to facilitate consistency across museum settings.

We have virtual weekly meetings, along with both postdoctoral researchers to establish a shared language of terms for everything from NHM-specific programmatic terms to learning theory.

This project relies on the personal relationships forged between PCOs and program facilitators in order to set expectations as researchers while supporting a positive, informal learning environment. Through open communication between practitioners and PCOs and site-specific research design, we have been able to support both the goals of the research and the CCS programming.



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