

Citizen Science in Schools: Fostering Mutualism Between Citizen Science and Science Education (Poster)

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Abstract

Citizen Science is a genre of research that connects scientists and non-scientists in collaborative work around scientific projects (Bonney et al, 2009). The past two decades, with their rapid development of data-centric communication technologies, created fertile grounds for a surging growth in citizen science endeavors.

Two concurring themes are tightly associated with citizen science: (a) extending science's educational outreach and (b) emphasizing its participatory aspects (Haywood and Besley, 2014). Both themes are aligned with contemporary science education goals (Hazelkorn et al, 2015). This congruence provides an incentive for introducing citizen science into school-set science education. Nonetheless, multiple goals and needs of different stakeholders make citizen science projects hard to design and execute. Difficulties are accentuated within schools, which are generally characterized by a stated and partly dictated set of objectives, practices and norms. The challenge is to integrate citizen science with classroom science education while preserving or increasing gains for scientists and other participants.

We propose a model for citizen science in schools, with the overarching goal of "mutualism" - providing benefits to all participants: scientists, teachers, students and surrounding community. The model draws on science communication and science education theories, and rests on several design principles:

Autonomy in goal setting: Each group of participants, as detailed above, sets its own goals and expectations for the citizen science process.

Students as scientific ambassadors: Students become advocates, communicating project-related information and executing activities for their close community.

Design-centric research-practice partnership (Kali et al, forthcoming, Severance et al, 2017): Learning activities are developed in collaboration between educational researchers and teachers.

Using a design-based research approach (e.g., McKenney & Reeves, 2012), the model was examined in two elementary-school classes participating in a citizen-science research project about jellyfish. Initial findings from a pilot

study, based on self-reporting questionnaires, show that: (a) students' attitudes towards their experience were mostly positive, (b) teachers perceive the pilot as beneficial to their professional development, and (c) contribution to the scientific research was lacking. Gains for the surrounding community were not assessed. A second iteration of the project is in progress.

This research will create practical knowledge on implementation of citizen science within formal and non-formal science education settings. Furthermore, it will provide insight on the nature of "mutualistic" citizen science, where distinct communities of practice meet to realize both shared and individual goals.

Keywords: citizen science, science education, science communication.

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