Citizen Science and Hazard Research

How can public participation in scientific research be used as a tool to build community resilience to hazard events?

Lisa McLaren, Prof David Johnston, Dr Julia Becker, Dr Emma Hudson-Doyle, Dr Abi Beatson

Citizen science for natural hazards

Citizen science can be defined as the inclusion of community members (geographical or interest groups) in scientific projects. There are multiple ways of setting up a project, depending on the purpose. Some projects aim to increase science education, where as others use citizens to gather large datasets. There are projects which are developed and run by scientists, while others are co-designed with community groups who share the data gathering, coding and publishing of the science with the academic researcher. [1-3] There are many examples of citizen science being used in natural hazard management internationally, including Aotearoa New Zealand's own Geonet app. [4] However, the impact of these projects on the participants and their communities is often not well studied.

Research objective

This research sits within the cultural workstream of the 'Resilience to Nature's Challenges' National Science Challenge. It aims to demonstrate how participation in citizen science can build community resilience to natural hazards. Existing projects will be analysed to understand the processes behind citizen science. Projects will then be created with the explicit goal of analysing if they can increase the resilience capabilities of a community in three areas; knowledge creation, participation, and trust.

Initial method

A literature review of 160 articles related to citizen science was undertaken, and analysed through thematic analysis. The intial themes were drafted into a logic model format which has been included in the box below.

Initial citizen science themes as a draft logic model

Input	Activities	Output	Outcome
• Purpose • Resources • Finance • Ethics • Terminology • Diversity • Knowledge • Motivation	• Participation • Roles • Engagement • Collaboration • Local context • Reciprocity • Diverse activities	• Create knowledge • Data quality • Partnerships • Publishing	• Learning • Science for change • Empowerment • Trust in science • Upskilled citizens

Next steps

The draft logic model will be expanded upon to build a draft model for effective citizen science development. Interviews of current citizen science participants will be conducted and the data fed into the model. The model will then be used to create two citizen science projects based on hazards. One project will be researcher led, while the other will be co-designed with a community group. Data resulting from these projects will be compared with the draft model and these combined findings will be used to develop guidance on how to use citizen science to increase resilience to natural hazards.

References:
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Lisa McLaren, PhD Candidate
l.mclaren@massey.ac.nz
+64 27 405 3218

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