

1.2. Improving learning in technological-advanced societies

SP - (18595) - CONTRIBUTIONS FROM CITIZEN SCIENCE TO CLIMATE CHANGE EDUCATION: PERCEPTIONS OF IN-SERVICE TEACHERS

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Short Abstract

Anthropogenic activities became the major driver of changes and impacts on Earth (Gibson & Venkateswar, 2015). For the marine ecosystems, climate change is associated with increasing water temperatures, acidification and deoxygenation (IPCC, 2017; Levin & Le Bris, 2015) which are related to changes in abundance and shifts in spatial distribution of species (Helmuth et al., 2006). Therefore, citizen science projects on rocky shores have studied the climate change response in abundance and spatial distribution of marine species (Vye et al., 2020).

Citizen science has also been recognized with great potential in the field of science education (Bonney et al., 2009; Carson et al., 2021), especially on the increase of scientific knowledge and science process skills (Hiller & Kitsantas, 2014; Queiruga & Saiz-Manzares, 2018; Saunders et al., 2018). Furthermore, inquiry-based learning with citizen science increases engagement and motivations of students (Jenkins 2011; Paige et al., 2015). The integration of citizen science in education provides the opportunity to reach all sections of society and can contribute to the development of climate change education in earlier ages (Boaventura et al., 2021).

This study aimed to investigate the perceptions of in-service teachers about the contribution from citizen science to climate change education. This goal was operationalized into the following research questions: 1) What are the perceptions of in-service teachers about the impact of the citizen science project on scientific knowledge and skills of the students? and 2) What are the perceptions of in-service teachers about the benefits of their participation during the citizen science project?

Five in-service teachers, belonging to different elementary schools, performed several activities with their students as a part of the citizen science project. Data were collected through semi-structure interviews, a questionnaire and field notes.

The results revealed that teachers changed their perception about the concept of citizen science during the project. All teachers have also recognized the positive impact of citizen science on: i) the scientific knowledge of students about causes and consequences of climate change, ii) the importance of identifying marine species and of monitoring its distribution, iii) the development of scientific skills, and iv) the awareness about environmental issues. Additionally, teachers considered possible to involve elementary students in all scientific stages, including formulating the research questions. Most of the teachers had an important contribute during the activities, linking the project to the school curriculum. Teachers were unanimous in mentioning the importance of their participation in their own pedagogical practice, especially on the promotion of more interdisciplinary and collaborative work and in the use of new technologies inside their classroom.

Despite the participation of teachers may have some constraints, especially the lack of confidence in their scientific literacy and the obstacles due the school frameworks and curriculums, teachers have an important key role in citizen science projects because they act as a participants, facilitators and motivators (Kloetzer et al., 2021). Moreover, teachers and scientists need to balance educational and scientific outcomes to guarantee successful cooperation (Kelemen-Finan et al., 2018).

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