8 - Scientific Literacy and Socio-scientific Issues | Empirical

SP - (15853) - SCIENTIFIC REASONING SKILLS PREDICT TOPIC-SPECIFIC KNOWLEDGE AFTER PARTICIPATION IN A CITIZEN SCIENCE PROJECT

Till Bruckermann (Germany)[1]; Hannah Greving (Germany)[2]; Ute Harms (Germany)[3]

1 - Leibniz University Hannover; 2 - Leibniz-Institut für Wissensmedien; 3 - IPN - Leibniz Institute for Science and Mathematics Education

Short Abstract

In citizen science (CS) projects, citizens (i.e., non-professional scientists) participate in scientific research. Besides fostering research, CS projects provide an informal education context with inquiry-based learning opportunities to promote participants' topic-specific knowledge and scientific reasoning skills. Previous research suggests that participants need scientific reasoning skills to engage in scientific inquiry during CS projects. Therefore, participants' scientific reasoning skills might be beneficial for inquiry-based learning and their topic-specific knowledge at the end of a CS project. However, in the informal learning context of CS, it has not yet been investigated whether scientific reasoning skills predict topic-specific knowledge. The present research used a cross-lagged panel design to investigate the relationship between scientific reasoning skills and topic-specific knowledge in longitudinal field studies of a CS project on urban wildlife ecology. Our results indicate that participants' scientific reasoning skills at the beginning of the CS project positively influenced their topic-specific knowledge at the end of the project. Extending previous research on individual learning outcomes of CS projects, the results show that inquiry-based learning in CS projects depends on participants' prerequisites, such as their proficiency in scientific reasoning. We discuss the implications for future research on inquiry-based learning in CS projects and further training of CS participants regarding their scientific reasoning skills.