Epistemic agency in an environmental sciences watershed investigation fostered by digital photography

Author: Heather Toomey Zimmerman and Jennifer L. Weible

Year: 2018

Abstract

This collective case study investigates the role of digital photography to support high school students' engagement in science inquiry practices during a three-week environmental sciences unit. The study's theoretical framework brings together research from digital photography, participation in environmental science practices, and epistemic agency. Data analysed include field notes and video transcripts from two groups of learners (n = 19) that focus on how high school students used digital photography during their participation in two distinct environmental monitoring practices: stream mapping and macroinvertebrate identification. Our study resulted in two findings related to the role of digital photography where students developed knowledge as they engaged in environmental monitoring inquiry practices. First, we found that digital photography was integral to the youths' epistemic agency (defined as their confidence that they could build knowledge related to science in their community) as they engaged in data collection, documenting environmental monitoring procedures, and sharing data in the classroom. Based this finding, an implication of our work is a refined view of the role of digital photography in environmental sciences education where the use of photography enhances epistemic agency in inquiry-based activities. Second, we found that the youths innovated a use of digital photography to foster a recognition that they were capable and competent in scientific procedures during a streamside study. Based on this finding, we offer a theoretical implication that expands the construct of epistemic agency; we posit that epistemic agency includes a subcomponent where the students purposefully formulate an external recognition as producers of scientific knowledge.

Keywords: Engagement; photography; science education; outdoor education; technology-enhanced learning; secondary education; life sciences; sociocultural theory; epistemic agency

Referanse: Zimmerman, H. T., & Weible, J. L. (2018). Epistemic agency in an environmental sciences watershed investigation fostered by digital photography. *International Journal of Science Education*, *40*(8), 894-918. https://doi.org/10.1080/09500693.2018.1455115

Tag: naturfag, teknologi, teknologistøttet læring

Revision #2
Created 14 June 2023 15:01:45 by Admin
Updated 4 September 2023 12:45:22 by Kristin