Using ethological techniques and place-based pedagogy to develop science literacy in Hawai'i’s high school students

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Year: 2020

Abstract

This high school-level, place-based, inquiry-driven laboratory module familiarises students with techniques used to analyse animal behaviour while facilitating the development of the observational skills highlighted by the Next Generation Science Standards (NGSS). Throughout the module, students observe, quantify, and discuss local invertebrate behaviours in the classroom. While field-testing the module with Hawai’i high school students, we administered anonymous, online surveys before and after participation to examine whether the use of animals and language from the local environment and cultural landscape unique to Hawai’i helped to connect students with the ecology surrounding them and emphasise the relevancy of scientific observations beyond the classroom. Survey responses indicated increased content understanding, increased confidence in scientific skills, and more positive attitudes towards marine science among participants. Utilising ethological techniques within a place-based framework provides an adaptable platform for students in any location to develop the science literacy skills at the core of NGSS.

Keywords: Animal behaviour; place-based education; hypothesis testing; experimental design; authentic scientific inquiry; experiential learning; student-centred; NGSS

Referanse: Ambrosino, C. M., & Rivera, M. A. J. (2022). Using ethological techniques and place-based pedagogy to develop science literacy in Hawai‘i’s high school students. *Journal of Biological Education*, *56*(1), 3-13. https://doi.org/10.1080/00219266.2020.1739118

Tag: naturfag, utforskende arbeidsmåter

Revision #3
Created 14 June 2023 15:04:36 by Admin
Updated 4 September 2023 12:32:44 by Kristin