

Quantitative Skills in Context

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Extended Abstract

Whether quantitative skills are best taught in the context of disciplinary science classes or in specially-designed courses in math and statistics for science majors is unclear. The aim of this study was to evaluate the quantitative literacy of beginning biology students and explore learning gains in quantitative literacy when quantitative skills are taught in the context of biology. During Spring and Fall 2015, I used the BIOSquare Quantitative Biology Assessment designed by an HHMI collaborative as a pre-test/post-test in my Organismal Form and Function course of approximately 60 students. In addition, I asked demographic questions and questions about previous quantitative training. Students showed a statistically significant increase in quantitative skills with scores on the assessment increasing from 61% to 64%. However, the effect size was small (0.225) and gains differed depending on semester. Pre-test scores were influenced by year in college, gender, URM status, and whether students had taken a discipline-based statistics course or not. Changes in quantitative literacy depended on URM status and whether students had taken a discipline-based statistics course or not.

About the Author

Christopher Beck earned his B.S. in biology from the College of William and Mary and his Ph.D. in ecology from the Institute of Ecology at the University of Georgia. He is a Professor of Pedagogy at Emory University in Atlanta, where he teaches introductory biology for non-majors, organismal biology, ecology, and ecology lab. He is current president of the board of ABLE and the lead editor for Teaching Issues and Experiments in Ecology (tiee.esa.org). He is co-developer of the bean beetle model system for inquiry-based labs (www.beanbeetles.org), with Dr. Larry Blumer.

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