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Microbiomics education using a mini-CURE format results in a high level of scientific discovery perception

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Abstract

The rapidly expanding research field of microbiomics requires more specialized lab technicians. Teaching 'omics' research methodology in a course-based undergraduate research experience (CURE) format has been shown to be highly effective. Currently, we developed a 4-week mini-CURE using publicly available Australian coral microbiome DNA sequencing data. We evaluated our mini-CURE using 2 hallmarks that measure student's perception of doing original scientific research *(discovery & iteration)* and 3 omics-research based student performance criteria *(data generation, analysis & application)*. The 'discovery' hallmark received high agreement scores, indicating high levels of student perception of scientific discovery. Two out of 3 'iteration' dimension items showed lower agreement scores, indicating a perception of lack of time to revise analyses and research questions; motivating students to invest more time may solve this issue. Students performed well with sufficient scores over 70% for all performance criteria.
We conclude that our mini-CURE performs well on the discovery hallmark but needs optimization for iteration to enhance the students' scientific research experiences.

Keywords: microbiomics, education, bioinformatics, biostatistics, discovery, iteration, inquiry, coral

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