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Assessment of the Impacts of Bio Sci D140: How to Read a Science Paper on Student Attitudes towards Biological Research

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Students that major in the biological sciences aspire to go on to careers in a variety of different fields – including health sciences and biological research – and success in these fields require both a comprehensive knowledge of biology and training in scientific inquiry. To complement their classroom training, many undergraduates conduct original research in a laboratory. Unfortunately, student researchers often struggle to grasp the broader scope of their research project, a major reason for which is the challenging nature of reading the primary literature necessary to place their work into context. Students report that this can lead to a lack of confidence in their ability to understand and perform biological research, and in the long run, this might cause students to come away with a negative attitude towards the value of biological research. To satisfy the need to train students in the critical analysis of primary literature, the Developmental and Cell Biology department at UC Irvine has designed a new course, Bio Sci D140: How to Read a Science Paper, taught by two senior graduate students. This small, discussion-based course integrated seminars and journal clubs to provide guided instruction on the critical analysis of primary scientific literature and give students the opportunity to interact with investigators from the relevant research laboratories. In this study, we sought to evaluate whether participation in Bio Sci D140 altered student perceptions of the value of scientific research and self-efficacy in biological research. At the beginning of the course, students were asked to self-report their attitudes towards biological research, its relevance to their career goals, and their confidence in learning, performing, and communicating biological research. At the end of the course, students were asked similar questions, and changes in attitude were measured. Here, we present the structure of this new course, student assessments of the course components, and our current analysis of the effects of this course on student attitudes towards biological research. The results of this study will be instrumental in improving scientific training for biological sciences majors at a large research university.

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