

Authentic Research in Undergraduate Biology Laboratory Courses: Definitions, Implementation, and Barriers

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Research Experience in Introductory Laboratories – Biology is an NSF RCN-UBE incubator project to increase the use of authentic research experiences in introductory laboratory courses. REIL-Biology is a collaboration among members of the Association for Biology Laboratory Education (ABLE) and the Council on Undergraduate Research (CUR). We conducted a national survey of faculty teaching introductory laboratory courses and received 279 responses from faculty representing all undergraduate institution types reporting on 532 introductory laboratory courses. We conducted a preliminary analysis of free response definitions of authentic research, tabulated current implementation of authentic research in introductory laboratories, and tabulated information on barriers to implementing authentic research. Definitions of authentic research vary but focus on themes pointing to the process of discovery. Little or no research experience occurs in approximately one-half of all laboratory courses. Authentic research experiences were least frequently implemented at 2-year colleges and in non-majors or pre-health laboratory courses. The implementation barrier most often reported was lack of time to develop research experiences. Other potential barriers that were noted in our preliminary analysis, such as lack of equipment, class size, and lack of student preparation varied significantly between institution types. Our findings will be the basis for developing a full RCN-UBE proposal to improve implementation of authentic research and broaden participation of faculty and students in the most effective learning and teaching practices.

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