Abstract

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"Improving Student hands on laboratory skills through digital badging"

Digital badges hold potential for use in the undergraduate chemistry curriculum as a means to assess hands-on laboratory skills. Badges are a set of tasks created using principles of evidence-centered design and they allow instructors to draw conclusions based on authentic evidence of students' knowledge, skills, and abilities. This type of assessment is valuable across the chemistry curriculum and especially in the undergraduate laboratory. Research has demonstrated that across the chemistry curriculum faculty identify hands-on skills as one of two over-arching goals. Assessment of these lab skills, however, is often overlooked due to time and resource constraints – especially in large courses. Digital badges address this problem by providing a platform for students to demonstrate their knowledge of hands-on lab skills while receiving direct feedback about their technique. We have developed digital badges for three techniques, pipetting, using a buret, and making solutions in a volumetric flask. These badges have been implemented across multiple populations of general chemistry students, encompassing over 3000 students each semester. This presentation will discuss the design and implementation of the badges and the results from assessments of impact on students' knowledge, confidence, and experience with these techniques.