Design-Based Virtual Biology: Finally Something That Works

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“Teach Biology online,” “Make Biology more accessible.” These kinds of requests are plaguing science educators. Oftentimes, as a result, rigor is compromised and the effective part of learning that is provided by a face to face laboratory experience goes by the wayside. Some people are choosing to use a separately purchased lab kit, requiring a lot of extra cost to the student. This session will walk attendees through the creation of a virtual design-based course (using an integrative STEM model) that uses wet labs to drive the content presentation. Students complete the lab at home with minimal cost and meet synchronously (but still at a distance) as lab groups to discuss conclusions and decide the method/design for the next lab experiment. The example BIO 101 course culminates with student lab groups designing and building a device used to harvest and recycle carbon dioxide. Student groups then present the device live online. Preliminary pretest/post-test data indicate that student success rate is higher for this virtual course and that learning is at a higher level that comparative face-to-face or hybrid courses.

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