

The Effect of Active Learning Videos on Organic Chemistry Learning

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Abstract

A challenge that many students face when learning organic chemistry involves balancing concept learning and concept application in problem-solving. Too often, students lean towards rote memorization and binge learning to learn organic chemistry without understanding the concepts behind them. This leads to lower retention of information and limited ability of the students to efficiently progress further in their organic chemistry education. In this project, we offer supplemental video resources as a tool for students to learn and apply organic chemistry one concept at a time. The videos differ from simple concept-review in that they integrate active learning exercises. Video length generally ranges from three to ten minutes and follow a basic template of concept introduction, connection to previously learned topics, followed by a concept check where students are asked to pause the video and solve the displayed problem based off of previous and newly acquired knowledge. The videos continue the pattern of concept coverage followed by application exercises, allowing students to interact with and use the concepts instead of passively absorbing material. After each problem, a short explanation is given where concept utilization is emphasized. The goal is to increase student knowledge retention and learning by supplying additional online resources that allow the student to actively engage in the material. Student participation in the study was selected on a voluntary basis from the Organic Chemistry II course. Participation involved watching a set number of videos per week as per course schedule, followed by an online survey. Short written assignments addressed students' conceptual and practical understanding from the videos. Small groups met periodically to discuss content progress and the effects of video utilization during the semester-long course, with discussion centered around the student's ability to connect concepts, as well as inquiry into the video's role in student learning.

Biography

Joyce Su is currently working on her Bachelor's in Biochemistry at Case Western Reserve University (CWRU). She has worked as a Supplemental Instruction (SI) leader in the Educational Student Services department at CWRU for two years. She has previously worked

with both Introductory Biology I & II courses and currently works as the Organic Chemistry I & II SI leader. She has further had past experience working as a teaching assistant for Organic Chemistry I & II in active learning summer courses. She currently works as a student researcher in the Biochemistry Department at CWRU. Joyce also spent the 2016-2017 academic year studying abroad at Tsinghua University in Beijing, China under the Chinese Government Scholarship, learning the Chinese language.

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