Active Learning in Organic Chemistry

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Students planning to pursue careers in health professions are required to take two semesters of organic chemistry. The visual and spatial reasoning demands of this course challenge students, often leading to frustration. Active learning methods can ease student frustration by encouraging students to spend time learning to use models and improving their visual reasoning skills. We use blended learning in organic chemistry to facilitate the use of active learning by enhancing student efforts on course materials before the concepts are discussed in class. We have implemented Just-in-Time Teaching, assigning readings associated with warm-up activities before concepts are discussed in class. Students access the warm-up activities through Moodle, the course management system used on our campus. A small percentage of the course grade is based on students’ completion of the warm-up activities. Some warm-up activities incorporate OpenOChem, an open-source system (currently under development) that allows instructors to assign questions which students answer by drawing chemical structures. The course textbook is freely available to students from the LibreText website (http://chem.libretexts.org). Students who would prefer to use a printed textbook are encouraged to purchase an older edition text with concepts covered in the same order. Due to their pre-class preparation, students reach a deeper level of understanding of material during class meeting times. Students work in teams to solve problems and answer questions during class, discussing terms and questions as they struggle to understand concepts. Some in-class activities involve the use of response systems such as Nearpod, which enables instructors to ask questions which students answer by drawing their answers in iPads or other devices.