

Project Name:	Enhanced Learning Support in Organic Chemistry
MIU Round(s):	3
Sponsor(s):	College of Letters and Science
Coordinator(s):	James Weisshaar
Partner(s):	Gary Sandefur, Nancy Westphal-Johnson
Report Date:	Year 1, July 2012; Year 2, July 2013

Project Goal and Measures

Project Impact Measure(s)	Add teaching assistant-led, problem-oriented discussion sections to all sections of Chemistry 343 (Introductory Organic Chemistry) and Chemistry 345 (Intermediate Organic Chemistry) in order to: <ul style="list-style-type: none"> • Decrease the number of students who repeat Chemistry 343 and 345. • Eliminate the student practice of putting off taking Chemistry 343 and 345 until they can enroll in a section with TA-support. • Increase practices known to increase learning such as group-based learning, increased time-on-task, increased frequency and individualization of feedback.
Project Impact Data Source(s)	Department of Chemistry
Baseline Measure(s)	2009-10 staffing and resource levels.

MIU Impact Measures

A	Increased access in bottleneck areas	Prior to MIU-funding a limited number of organic chemistry sections had TA support. Students frequently requested TA support or commented on the lack of it in course evaluations. Also problematic is the observation that some students were delaying enrollment in organic chemistry until they could enroll in a TA-led discussion section. This contributed to longer time to degree and resulted in students getting "off cycle" with other required coursework. By adding TA-support to every section, students will no longer have this unintentional incentive to delay enrollment.
D	Increased student learning and teaching excellence	Having a single instructor responsible for 350 students in a high-stakes course was never an ideal situation. However, given its resources, the Chemistry department focused TA support on introductory classes. The MIU funding for organic chemistry TAs will provide much-needed and much-requested support in a course that students frequently describe as the most challenging that they had encountered up to that point.

F	Decreased achievement gaps	Since 2009, the Department of Chemistry has been engaged in ongoing work with the Vice Provost for Teaching and Learning in a large-scale experiment in Chemistry 103 called "Closing the Achievement Gap". The project is designed to understand the genesis of the achievement gap in Chemistry 103 and implement high impact practices to ameliorate the gap. Lessons learned from this project will be applied to organic chemistry including increased interaction among students in the sections, increased time on task and frequency of feedback.
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Progress Reports

Year 1, 2011-12

- Added an optional workshop-discussion section to Chemistry 343 and 345 by increasing staffing to 12.5 50% teaching assistants. Student survey results show that:
 - More than half the students attended more than half the discussion meetings.
 - 70-75% of the survey respondents agreed or strongly agreed that the discussion meetings increased their understanding of the course content, that the meetings helped them take exams with more confidence, and that the TA was an effective instructor.
- Utilized one TA to develop WebMO-based computational components for Chemistry 344 (organic chemistry lab). This is a chemical modeling program designed to enhance learning about chemical structures. Early results suggest that students utilized the program and understood its intended value. Implementation of this program will continue in 2012-13.

Year 2, 2012-13

- Continued staffing Chemistry 343 and 345 with optional workshop discussion sections.
 - Utilized one TA (and two independent study undergraduates) along with a Chemistry faculty member to develop a new Chemistry 346 synthetic lab project. This project will debut in Fall 2013 and will enable students to gain technical and practical experience in research.
 - Assessment: No assessment of student learning outcomes was reported.
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