



Active Learning in Organic Chemistry Symposium at the Orlando ACS Meeting

Dear OrganicERs,

We invite you to present all the exciting things you are doing in your organic chemistry class at the Active Learning in Organic Chemistry Symposium at the [ACS meeting in Orlando](#). We decided to organize this symposium to provide an opportunity to people who could not make it to the BCCE. Our symposia feel like reunions for people who went to cCWCS ALOC workshops and provide a great opportunity to network and share ideas for new members of the community of organic chemistry educators. The deadline for abstracts is October 29.

Alex Leontyev and Jennifer Muzyka

Here's the description of the symposium.

Active Learning in Organic Chemistry

Multiple studies have shown that the use of active learning pedagogies in the classroom result in positive student learning outcomes in science courses. These improved outcomes include higher test scores and final grades, improved understanding of content, lower withdrawal rates, and more positive attitudes toward science. There are many techniques that can be implemented to introduce more active learning into any environment, including those that can be incorporated into traditional lectures, used to completely flip the classroom, or create hybrid courses. This symposium includes presentations of organic chemistry faculty who have implemented active learning, broadly defined, in their organic courses.

OrganicERs on Facebook



Most of the discussion among members is occurring on Facebook. New posts appear regularly. For those with concerns about recent news about Facebook, the leadership board is considering alternatives.

Welcome to Two New Members to the OrganicERs Leadership Board

With plans to begin new initiatives and provide more service to the OrganicERs community, we have added two members to the leadership board.



Matthew Casselman joins the board from the University of California, Riverside. He obtained his Ph.D. in organic chemistry from Alexander Wei at Purdue University. Following his Ph.D. he was a postdoctoral research associate for Susan Odom and an instructor at the University of Kentucky. His research is currently focused on active learning in large classes with diverse student populations.



Joshua Ring has been a past ALOC Workshop participant and his recent publication on specifications grading in the Journal of Chemical Education was highlighted in the previous newsletter. He obtained his Ph.D. in Pharmaceutical Sciences from Peter Crooks at the University of Kentucky in 2006. He was a postdoctoral research associate for Smita Mohanty at Auburn University and joined Lenoir Rhyne University in 2008.

Post BCCE 2018 Report



The [25th Biennial Conference on Chemical Education](#) was packed with exciting presentations on innovative ways to teach chemistry. The Active Learning in Organic Chemistry [symposium](#) with 28 presentations over four sessions was well attended. Three sessions had approximately 50 attendees and 98 were present at the Assessment & Technology to Facilitate Active Learning session! Twelve members from past ALOC workshops gave presentations. There were lively discussions (in a good way) at each session. Justin Houseknecht and Cathy Welder presented a workshop on Active Learning in Organic Chemistry: Backward Design. Justin Houseknecht and Alexey Leontyev led another

workshop entitled Active Learning in Organic Chemistry: Collaborative Learning and Classroom Assessment Techniques. Jennifer Muzyka was one of the leaders in the OpenOChem Project – Creating interactive chemistry assessments and presentations accessible from most any LMS workshop. Alexey Leontyev led a workshop and organized a symposium for 3D printing. Forty attended the OrganicERs / Active Learning in Organic Chemistry Birds of a Feather lunch.

Member Spotlight: Laurie Starkey



I have been teaching Organic Chemistry and Organic Synthesis at Cal Poly Pomona since 1996. Over the last 20 years, I have been immersed in SoTL research around the use of teaching with technology, such as developing animations and simulations for laboratory techniques (distillation, TLC and extraction), creating and assessing online pre-lab tutorials and quizzes, creating video lessons using a variety of apps, developing multiple-choice questions for classroom “clickers,” creating and implementing assignments for Calibrated Peer Review (CPR) and providing lectures for Educator.com. I recently recorded my first video lecture (hybridization and geometry) using a light board, and I look forward to finding more applications for this exciting new technology. I wrote a textbook for senior-level undergraduate students and beginning graduate students, “Introduction to Strategies for Organic Synthesis” (Wiley, 2012) and I published an expanded 2nd edition in March 2018. For ten years I served on the GRE-Chemistry Committee of Examiners, so I really know a lot about writing excellent multiple-choice questions! My community involvement includes providing a variety of novel, hands-on science demos at the local elementary school every year since 2009 (see videos on my YouTube channel, ChemistryConnected!).

I have not had the pleasure of attending any cCWCS workshops, but I have been fortunate to be involved in a series of CSU-sponsored course-redesign projects over the past three years. This had led to an exciting exploration of ways to promote better study skills and a growth mindset (e.g., Organic Learning Communities “OLC” study groups, exam wrappers, learning-centered redesigned syllabus). This past year, I created a publicly available online repository called LOCAL (Library for Organic Chemistry Active Learning) to house clicker questions, worksheets, problem sets and other useful materials to support in-class problem solving. It was while doing research for this latest project that I discovered the OrganicERS community, and I look forward to getting more involved.

LOCAL – Library for Organic Chemistry Active Learning

<http://www.cpp.edu/~lsstarkey/local>

Resources for Teaching...with and without Technology (making videos, mindset, metacognition, exam wrappers)

<http://www.cpp.edu/~lsstarkey/references.html>

Organic Chem Lab Tutorials, Animations

<http://www.cpp.edu/~lsstarkey/ochemlab>

Lightboard lecture

https://youtu.be/LM-0t_VITA0

Educator.com lectures

<https://www.educator.com/learn/chemistry/organic-chemistry/starkey>

YouTube Channel

<https://www.youtube.com/user/ChemistryConnected>

Implementation and Student Perceptions on Google Docs as an Electronic Laboratory Notebook in Organic Chemistry



Deborah Bromfield Lee (Florida Southern College, 2014 cCWCS ALOC workshop participant in Colorado) has recently published her use and implementation of Google docs as electronic notebooks in organic chemistry (**DOI:** 10.1021/acs.jchemed.7b00518). Paper-based notebooks can be easily damaged, can be hard to read if the student has poor handwriting and require the instructor to collect them or the carbon copies if used when grading. If the students do not organize the notebook carefully, the notebooks can become sloppy and difficult to interject material that was forgotten. Electronic laboratory notebooks (ELN) are a way to alleviate these issues. There are many platforms that can be used. In the publication, Google Docs was used as it is free, has a similar structure to Microsoft Word and many students are familiar with it. The ELN was implemented at Florida Southern in Organic I and II and initially compared to the traditional paper-based notebooks. Now they are used exclusively in the organic lab sequence as well as other laboratories.

The format of the organic laboratory used pencasts (created with a Livescribe Echo Pen) for the pre-lab lecture alongside videos on setting up glassware, reactions or

methods. Students answered prelab questions as well as wrote their own questions on the lab into the ELN. Professors gave students feedback on their performance, questions and discussions more regularly than what was previously possible as they can access student notebooks anywhere.

Using ELN templates which are designed to scaffold student learning on how to put together a laboratory notebook, helped instructors educate students about notebook organization and knowing what is important. The templates had spaces for required sections and formatting for the data. Prior to the ELN, students were using hardcover notebooks which made it difficult to give students feedback early and often. The ELN allows students to collaborate with each other, paste images, inserts links and easily correct mistakes. Students were aware that falsification of data was not tolerated but could be detected because of the history feature. Labarchives was used in some labs due to the ease of setting up the ELN, ability to sign papers which locks the page from editing, and allows for updates after the notebook is set up (though not discussed in the article). However, this platform is not free.

Details of the study can be found in the JCE article, but some observations are worth noting. The student surveys show how much time was spent on notebooks and reports, the helpfulness of the ELN and students' perceptions on the ELN indicate that their use has been positive on students. Most students reported spending 1-2 hours on their ELN vs. 3-5 hours for paper-based notebooks. Students reported spending 15-30 minutes entering data into their typed reports as compared to 1 or more hours in traditional formats. They also found that ELNs were in general more helpful and facilitated collaboration with their peers. The ELN notebooks are now being used by most of the faculty in the department for their undergraduate research projects as well.

Board Members' Picks

Some publications, presentations, and events that caught our interest

From Alexey Leontyev

Antipin, I.S.; Kazymova, M.A.; Kuznetsov, M.A. et al. History and Mutual Relations of Universities of Russia. *Russ. J. Org. Chem.* **2017**, *53*, 1275-1437.

<https://doi.org/10.1134/S1070428017090019>

<https://link.springer.com/article/10.1134/S1070428017090019>

From Jennifer Muzyka

Weimer, M. *Learner-Centered Teaching: Five Key Changes to Practice*, 2nd Edition, John Wiley and Sons: San Francisco, 2013.

From Cathy Welder

McGuire, S. Y. *Teach Students How to Learn: Strategies You Can Incorporate Into Any Course to Improve Student Metacognition, Study Skills, and Motivation*, Stylus Publishing: Sterling, VA, 2015.

Upcoming Events

[2018 ACS Midwest Regional Meeting, Oct. 21-23, Ames, IA](#)

[70th ACS Southeastern Regional Meeting, Oct. 31 – Nov. 3, Augusta, GA](#)

[74th ACS Southwest Regional Meeting, Nov. 7 - 10, Little Rock, AR](#)

[ACS National Meeting & Expo, Chemistry for new Frontiers, March 31 – April 4, Orlando, FL](#)

[Chemistry Education Research & Practice, Gordon Research Conference, June 16 – 22, 2019, Bates College, Lewiston, ME](#)