Vol. 8 Issue 1 Winter / Spring 2018

The POGIL Inquirer

In The Spotlight: Sally Hunnicutt

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From The POGIL Project Director

Dear Friends,

It may still be winter, but here at The POGIL Project, our activities are keeping the cold weather at bay. Most notably, we have begun a POGIL webinar series, which has garnered a great deal of interest. Stay tuned for more offerings in this venue, as we continue to try to meet the needs of our community for ongoing professional development. We are also planning our usual lineup of regional workshops in various parts of the country this coming July, as well as our Facilitator Training Workshop for aspiring POGIL facilitators and a new Writers' Retreat for those who want to focus on developing, writing, and improving POGIL activities under the mentorship of experienced POGIL author coaches.

As always, we are also eagerly anticipating our annual POGIL National Meeting in June, at which time we will be approving an update to our 5-year strategic plan. The plan has helped guide the activities of The Project and set priorities for our leadership, staff and community. I am looking forward to seeing what the next 5-year plan will bring to the table and what interesting and groundbreaking work it will inspire from our POGIL family as we continue to grow and impact education in both the United States and around the globe.

Here's wishing all of you a mild and productive spring (just around the corner!) and hoping that we see you this summer.

Richard S. Moog

Upcoming Workshops

March 10	WITEA Spring Conference, Wenatchee, WA
March 14	POGIL eSeries webinar – Assessing Process Skills
April 9	Kohelet Yeshiva HS, Merion Station, PA
April 11	POGIL eSeries webinar – Valuing Process Skills in the Classroom
April 13-14	Jefferson Community & Technical College, Louisville, KY
April 21	POGIL NW Summit, Kirkland, WA
May 5, 12	Teaching with Your Mouth Shut, Seattle, WA

For more info on upcoming POGIL workshops, visit www.pogil.org

The POGIL Inquirer is a publication of The POGIL Project, a 501(c)3 corporation.
The POGIL Project • Box 3003 • Lancaster, PA 17604-3003
Rick Moog, Director Marcy Dubroff, Executive Editor Katie McCarthy, Intern

Ask The Mole

Q: How do I ensure a safe environment in a POGIL classroom?

A: In a POGIL classroom, students are often asked to publicly share their understanding of concepts, an experience that can often provoke anxiety. There are students who are ready to blurt out an answer at a moment's notice while others may need more processing time to consolidate their ideas before answering. By creating safe "thinking time" for students before they are asked to report out an answer, facilitators allow all students to be successful (Row, 1974; Dweck, 2006; Nielsen et al., 2012). It is imperative to create a safe environment where students are confident they will never be humiliated in front of their peers (Bain, 2004). In the process of reaching class consensus on an answer, the facilitator can honor each spokesperson's contribution even if it does not turn out to be the right answer. This also models the process of reaching consensus, a skill that will improve team success in future interactions. Facilitators can model positive social interactions by:

- listening respectfully to every student's answers
- thanking each student for sharing
- affirming portions of answers that are correct
- asking a simpler question for completely erroneous answers, so the student can answer successfully before moving on to another student
- accepting a student's incorrect answer and following up by asking other teams' spokespersons if they agree or disagree
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- *Feel free to suggest your own topics. The more ideas we have, the happier the POGIL community will be! If you have any questions regarding inquiry learning, POGIL materials, or any POGIL-related knowledge, email us at marcy.dubroff@pogil.org*

Where in the world is the POGIL water bottle?

Is your POGIL water bottle coming out of hibernation? Has your bottle traveled the world? We'd love to see where our iconic bottle has traveled this past year!

Send us pictures of wherever it may so we can find out where the bottle has gotten its passport stamped. The best photos will be featured on our website and in our new POGIL water bottle calendar! Feel free to give us some detail! We love living vicariously through the bottle's adventures.

Send your photo or video of your water bottle to Marcy Dubroff at marcy.dubroff@pogil.org.

In the Spotlight:
Sally Hunnicutt

Virginia Commonwealth University, Richmond, VA

Hunnicutt is a member of the POGIL Steering Committee and the editor of the POGIL Blog. Since 2005, she has used POGIL to teach general chemistry and physical chemistry. She is currently working with other physical chemistry faculty on an NSF-funded project to develop, write, test, and implement POGIL experiments for the physical chemistry laboratory.

In the early 2000s, Sally Hunnicutt, who is now a professor of chemistry at Virginia Commonwealth University, encountered POGIL during its first-ever series of NSF-funded workshops. At the same time, Hunnicutt's class size ballooned, and she started teaching 200 students each semester.

"I had about one of the worst teaching experiences I've ever had," Hunnicutt recalls. "It was *not* pretty."

So Hunnicutt set out to make changes that could improve student learning, and started using POGIL with 60 or 70 students at a time. Now, some 15 years later, Hunnicutt is recognized as one of the leading POGIL practitioners in the country, and she's particularly focused on reaching educators who teach in large-lecture formats.

"In larger classes, it's actually more important to use POGIL," Hunnicutt says, though this may seem counterintuitive. "It's very easy for students to hide in a large class, and it's very easy for faculty to be fooled that their students are understanding or engaged."

"In a large class, there also isn't a good sense of community or trust," Hunnicutt adds. She's come to learn that students need to believe their instructor "is leading them somewhere that matters."

"That's what teaching is," says Hunnicutt. "It's building that trust."

A POGIL classroom allows Hunnicutt to build community — and for students to trust one another, too. But it's also a method that gives Hunnicutt results. In 2012, Hunnicutt received VCU's prestigious College of Humanities & Sciences Teaching Award.

"One of the things I've learned," says Hunnicutt, "is that if I'm doing all the talking, students aren't doing any learning."

In a funny turn of events, one of Hunnicutt's former students had a father who worked as a pharmaceutical scientist at Pfizer, which is just two miles down the road from VCU in Richmond. Hunnicutt wound up bringing the POGIL method to the company's labs to address teamwork issues.

They're looking at the learning cycle to develop a process that makes sense for their business goals," Hunnicutt explains. "They wanted scientists to 'fail fast' — to make an experiment and collect data quickly before doing a longer trial."

Pfizer was so impressed with Hunnicutt's facilitation that they're still using some of the ideas she brought to their lab - and they're interested in hiring some of her students, too.

But Hunnicutt takes all this in stride — she knows what works best for her students, and what makes teaching more enjoyable.

"Being in a POGIL classroom is just flat-out more fun," she says. "For me, it's a positive feedback loop."

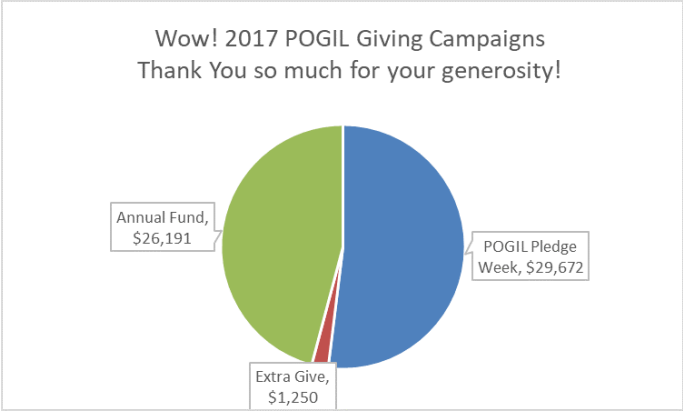
Fundraising Update from The POGIL Project

Thank You to our POGIL community for a great 2017!

We are deeply grateful to each and every one of our POGIL community members who gave so generously in 2017, and who continue to make a profound difference in the lives of thousands of teachers and students each year through your support.

We'd also like to send a special shout-out to our 100 Sustaining Partners, who have made a gift for three or more consecutive years or have joined our monthly giving program. Your ongoing support helps keep the workshops, scholarships, and materials coming, AND helps keep the lights on!

All year long, you give of your time, your treasure, and your hearts to make it possible for every student to experience an education that prepares them to think critically, solve problems, work with others, and experience the joy of discovery.



You come together as a community to coach and mentor your colleagues, to strengthen POGIL and The POGIL Project, to develop POGIL activities and workshops, to participate in POGIL Pledge Week, the Extra Give, and the Annual Appeal. You serve on the Steering Committee and Strategic Plan Working Groups—all so that students can experience a more meaningful education.

To all of you who give so much, you are truly our heroes and we thank you from the bottom of our hearts. We couldn't do it without you!

Thanks to your support,
The POGIL Project was able to provide:

- Teacher scholarships to POGIL workshops: 65 Educators/**$42,746**
- Funding for new POGIL activities development: **$2,942**
- SPUR+ grant: **$2,500**
- Workshop subsidies to schools: 8 workshops/**$10,500**

Registration Open for Summer Workshops

If you are a high school teacher or college/university instructor and want to enhance your professional development, our POGIL 3-day workshops are for you! You will learn about POGIL's philosophy and methodology and benefit from additional focus on activity writing, classroom facilitation, and/or lab implementation. Informative poster and plenary sessions will provide you with opportunities to meet and network with other POGIL users.

Three Tracks to Choose From in 2018

These workshops are designed for both those who are new to POGIL and those who have previously attended a POGIL workshop. On the first day of the workshop, new POGIL participants will attend a "Fundamentals of POGIL" session while previous participants will attend two sessions of universal application. The start of the second day will expose all participants to facilitation in a POGIL classroom and POGIL activity structure. For the remainder of the workshop, participants will follow a series of sessions focused on their chosen area of interest - Activity Writing, Classroom Facilitation, or Implementing POGIL in the Lab.

For more information on the tracks, please visit https://pogil.org/2018-summer-regional-workshops

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Registration Information

The workshop fee is $425, which includes registration, materials, three lunches, and two dinners. On-campus housing for two nights is available for an additional $175 and includes two accompanying breakfasts. Visit www.pogil.org to register today!

Northeast Regional Workshop
Manhattan College
4513 Manhattan College Parkway
Riverdale, NY
July 10-12, 2018

Northwest Regional Workshop
University of Puget Sound
Tacoma, WA
July 10-12, 2018

*****Thanks to an anonymous donor, we have a limited number of scholarships available for rural High School STEM teachers from the states of Washington and Idago. Visit www.pogil.org for more information.**

North Central Regional Workshop
University of Illinois at Chicago
Chicago, IL
July 16-18, 2018

South Central Regional Workshop
University of Texas at Dallas
Richardson, TX
July 17-19, 2018

Contact Marcy Dubroff to find out which track is right for you (marcy.dubroff@pogil.org) or Julie Boldizar (Julie.boldizar@pogil.org) or Ellen Harpel (eharpel@pogil.org) for additional information about the workshops.

Register today!

Writers' Retreat Workshops

St. Louis College of Pharmacy, St. Louis, MO
July 23-26

This retreat will provide an opportunity for individuals and small teams to work on developing, writing, and improving POGIL activities with the mentorship of experienced POGIL author coaches. The agenda also includes workshop sessions focused on activity authoring, feedback sessions, and ample time for writing and interacting with other authors and author coaches.

Apply: To apply for this workshop, applicants will need to complete the POGIL Writers' Retreat application by March 31.

Payment: The workshop fee is $500 and includes registration, materials, and four lunches. On-campus housing for the nights of July 22, 23, 24, & 25 is available for an additional fee of $225 and includes four accompanying breakfasts.
Attendees who are interested in earning graduate credits will pay an additional fee directly to Seattle Pacific University during the first day of the retreat.

Contact: For additional information and details on this workshop, please click here or contact Julie Boldizar (julie.boldizar@pogil.org).

Seattle Pacific University, Seattle WA
July 16-19

Please email Mare Sullivan (joe.mare.sullivan@gmail.com) if you are interested in attending the retreat at Seattle Pacific University.

Facilitator Training Workshop

University of St. Thomas
Saint Paul, MN
July 24- 26

This three-day POGIL professional development workshop focuses on workshop facilitation and provides training in student-centered teaching techniques. It is designed for those who attended the 2014, 2015, 2016, or 2017 regional workshops, the 2017 National Conference for Advanced POGIL Practitioners, or those who have previous POGIL workshop experience. Space is limited to 20 attendees.

To apply for this workshop, applicants will need to complete the Facilitator Training application by April 1, 2018.

The workshop fee is $800 and includes registration, materials, on-campus housing for the nights of July 23, 24 & 25, three breakfasts, three lunches, and three dinners. A limited number of of need-based scholarships are available for those who do not have access to professional development funds.

For additional information and details on this workshop, please visit the POGIL website event page here (https://events.pogil.org/event-2664953) or contact Ellen Harpel (eharpel@pogil.org).

POGIL Published Works

POGIL marginally effects student achievement measures but substantially increases the odds of passing a course

Lindsay Walker, Abdi-Rizak M. Warfa

While the inquiry approach to science teaching has been widely recommended as an epistemic mechanism to promote deep content understanding, there is also increased expectation that process and other transferable skills should be integral part of science pedagogy. To test the hypothesis that coupling process skills to content teaching impacts academic success measures, we meta-analyzed twenty-one studies (n = 21) involving 7876 students that compared Process Oriented Guided Inquiry Learning (POGIL), a pedagogy that provides opportunities for improving process skills during content learning through guided-inquiry activities, to standard lecture conditions. Based on conventional measures of class performance, POGIL had a small effect on achievement outcomes (effect size = 0.29, [95% CI = 0.15–0.43]) but substantially improved the odds of passing a class (odds ratio = 2.02, [95% CI: 1.45–2.83]). That is, participants in the POGIL pedagogy had higher odds of passing a course and roughly performed 0.3 standard deviations higher on achievement measures than participants in standard lectures. In relative risk terms, POGIL reduced the risk of failing a course by 38%. These findings suggest providing opportunities to improve process skills during class instruction does not inhibit content learning but enhances conventional success measures. We compare these findings with those of recent large meta-analysis that examined the effects of global active learning methods on achievement outcomes and course failure rates in science, technology, engineering, and mathematics (STEM) fields.

DOI:10.1371/journal.pone.0186203

Experimenting with the teaching of organic chemistry -- the process-oriented guided inquiry learning way

Gail Carneiro, Tanuja Parulekar, Gomathi Shridhar, Savita Ladage

Undergraduate students tend to find organic chemistry rather challenging and we as teachers of the subject are constantly trying to find new ways to enthuse students and help them understand and enjoy the subject. Active learning has taken centre stage today and one such student-centric teaching strategy, process-oriented guided inquiry learning has been explored by us. In this article we present our experience, the advantages of this teaching methodology and the likely challenges in implementation.

DOI: 10.18520/cs/v111/i7/1152-1155

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Kudos!

Gail Webster at Guilford College was recently promoted to full professor in the Chemistry Department.

Caryl Fish at Saint Vincent College was recently promoted to full professor.

Jenny Loertscher in the Chemistry Department at the College of Science and Engineering recently received Seattle University's 2017 Provost's Faculty Award for Excellence in Teaching.

Sheila Qureshi at the Weill Cornell Medical College in Qatar recently had her paper "Students' understanding of chemistry concepts in a premedical foundation year POGIL - oriented chemistry course" selected for publication by the 2018 Qatar Foundation Annual Research Conference.

Elliot Douglas in the Environmental Engineering Sciences Department at University of Florida was recently named the Associate Director for Research in the UF Institute for Excellence in Engineering Education.

Heather Wilson-Ashworth in the Biology Department at Utah Valley University recently received the UVU Presidential Award of Excellence for Teaching.

New Webinar Series on Zoom!

The POGIL Project is excited to announce a new eSeries focusing on process skills.

This series of three webinars will take place this spring and will be led by veteran practitioners Urik Halliday, Juliette Lantz, Teresa Bixby and Marty Perry.

Halliday's session, focusing on developing process skills, deals with when to introduce a process skill in the classroom, which skills should be developed first, and how to begin the development of these skills.

Lantz's session will address monitoring process skills and how students reveal evidence of process skills during classroom interactions, the use of rubrics to assess these skills in student interactions, and the use of rubrics to provide feedback to students on process skills development.

Perry and Bixby will close the series by encouraging participants to discuss and brainstorm strategies for valuing process skills in the classroom, including how to assign grades to the practice, reflection upon, and improvement of process skills in students/teams. All of the initial webinars are free of charge and will take place on the zoom platform. For more information, please contact Marcy Dubroff at marcy.dubroff@pogil.org.

POGIL Regional Coordinators

North Central Region—(IA, IL, IN, MI, MN, SD, ND, NE, OH, WI)
Craig Teague, Cornell College (2018)

Northeast Region— (CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT,WV)
Joe Brown, U.S. Coast Guard

Northwest Region—NW (AK, ID, MT,OR, WA)
Mare Sullivan, Seattle Pacific University
Charity Lovitt, University of Washington Bothell

Southwest Region—(AZ, CA, CO, HI, NM, NV, UT, WY)
Tim Herzog, Weber State University

South Central Region—(AR, KS, LA, MO, OK, TX)
Megan Daschbach, Washington University in St. Louis

Southeast Region—(AL, FL, GA, KY, NC, MS, SC, TN, VA)
Megan Hoffman, Berea College (2018)

Published Works

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Metacognition as an Element of the Scientific Process

Mary T. van Opstal, Patrick L. Daubenmire

The operational functions of metacognition parallel scientific thinking. We ask questions. We collect information. We evaluate that information. We find gaps in that information, and look to fill those gaps. This chapter shares ideas for how these two ways of thinking run in tandem to one another, and how such processes can be engaged and activated in learners in the instructional laboratory setting. Through the instructional venue of several inquiry-based approaches, students can develop and use these skills both during and outside of laboratory classroom environments. Many of these approaches have demonstrated increased metacognitive awareness and use by students as well as improved academic performance.

DOI: 10.1021/bk-2017-1269.ch004

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Published Works
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Students' attitudes, self-efficacy and experiences in a modified process-oriented guided inquiry learning undergraduate chemistry classroom

Venkat Rao Vishnumolakala, Daniel C. Southam, David F. Treagust, Mauro Mocerino, and Sheila Qureshi

This one-semester, mixed methods study underpinning social cognition and theory of planned behavior investigated the attitudes, self-efficacy, and experiences of 559 first year undergraduate students from two cohorts in modified process-oriented guided inquiry learning (POGIL) classes. Versions of attitude toward the study of chemistry (ASCI v2), and chemistry attitudes and experiences questionnaire (CAEQ) were adopted, modified, and administered to understand and gauge students' affective outcomes before (pre) and after (post) POGIL intervention. Students' post-POGIL perceptions of their attitudes, self-efficacy and experiences were statistically significantly higher. In addition to confirmatory testing of reliability of data obtained from ASCI v2 and CAEQ in an Australian POGIL context, the findings suggest that POGIL intervention provides positive affective experiences to students who are new to chemistry or have limited prior chemistry knowledge.

DOI: 10.1039/C6RP00233A

The impact of instituting Process-Oriented Guided-Inquiry Learning (POGIL) in a fundamental nursing course

Maurine C Roller, Susan Zori

POGIL, using small groups of students, who assume the roles of leader, manager, recorder, and reflector to complete problem based activities in science courses, has demonstrated significant improvement in students' grades and course satisfaction in science courses and a nursing Fundamentals course. Using POGIL with nursing students in fundamentals nursing courses could help to improve final grades and course satisfaction while promoting active learning, critical thinking, and teamwork.The results of this study revealed that Fundamental nursing students who experienced POGIL had significantly higher final grades and course satisfaction compared with students who did not experience POGIL. The active learning and teamwork experienced during POGIL, may be beneficial to students as they transition to practicing nurses. Additional research using POGIL with a variety of nursing courses could be beneficial in educating undergraduate nursing students.

DOI: 10.1016/j.nedt.2016.12.003

Looking to Book a Workshop?

• If you would like to bring a POGIL workshop to your area, please get in touch with us! We are interested in teaching more instructors about POGIL at both the high school and post-secondary levels and want to help them make their classrooms and laboratories more student-centered.

Please visit our website and submit a request a workshop form or email Marcy Dubroff at marcy.dubroff@pogil.org.

Send us your news!

We'd love to feature your news, your grant, or your video on the POGIL website and in the POGIL newsletter. Send news to Marcy Dubroff at marcy.dubroff@pogil.org
Get all the latest POGIL news by following us on Twitter or Facebook! Sign up to get our @POGIL tweets at twitter.com.

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Lancaster, PA 17603