Vol. 5, Issue 2 Fall 2015

The POGIL Inquirer

POGIL Kudos

POGIL practitioners earn honors around the country

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From The POGIL Project Director

Dear Friends,

I hope you had a great summer and that your fall classes are in full POGIL swing!

The POGIL Project was on the move this summer. We traveled throughout the U.S. and as far away as India and New Zealand to bring together hundreds of educators for POGIL workshops and regional summits. We also had a tremendous turnout for our National Meeting in St. Louis. With so many of you at the table sharing your talents and expertise, we made significant progress toward achieving our strategic plan goals.

I'm also excited to share that the American Chemical Society (ACS) has twice recognized The POGIL Project. In April, the ACS announced that the 2015 James Flack Norris Award would be presented to Jim Spencer, Frank Creegan and myself. And in August, I was humbled to be selected for the 2016 George C. Pimentel Award in Chemical Education. We are honored to receive these awards on behalf of The POGIL Project and our entire community.

Please remember, POGIL Pledge Week begins Oct. 19. Look for emails and videos featuring your colleagues during that week. Thank you for your amazing support last year and for all you do for the POGIL community. Your continued support and dedication make all of this possible. I wish you a very successful semester!

Richard S. Moog

Upcoming POGIL Events

Oct. 9	Round Lake High School
Oct. 13	North Carolina A&T
Oct. 15, 22, Nov. 5	Math for America Workshops
Oct. 17-21	Concordia International School – China
Oct. 23	Supporting the NGSS
Nov. 5	Bucknell University, PA
Nov. 5	Miramonte High School, CA
Nov. 7	Puget Sound Region POGIL Summit
Jan. 16-18, 2016	Facilitator Training Wkshp – Myrtle Beach
Feb. 9, 2016	Puget Sound Region POGIL Summit

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

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The POGIL Project • Box 3003 • Lancaster, PA 17604-3003
Rick Moog, Director Marcy Dubroff, Editor Kyah Eichholz, Intern

Ask The Mole

Q: How can I talk about POGIL activities with the POGIL community?

A: Check out the newly formed POGIL *Blog*! Thanks to the efforts of Tammy Pirmann of Springfield Township HS and Sally Hunnicutt of Virgnia Commonwealth University, we now have a blog located at https://thepogilproject.wordpress.com.

The blog is due to be updated weekly with new posts and a moderated forum. It is open to anyone who wishes to share their thoughts on the subject of the posts.

You can submit your comments by emailing your post to swilson1@pogil.org and it will be reviewed and shared the following week.

Upcoming topics include:

1. What is the Activity Development Network, and how can you get involved?
2. How can we use social media to promote POGIL?
3. Using online conference tools for meetings
4. What is the POGIL endorsement process?

Feel free to suggest your own topics. The more ideas, the merrier!

If you have any questions regarding inquiry learning, POGIL materials, or any POGIL-related knowledge, email us at mdubroff@pogil.org.

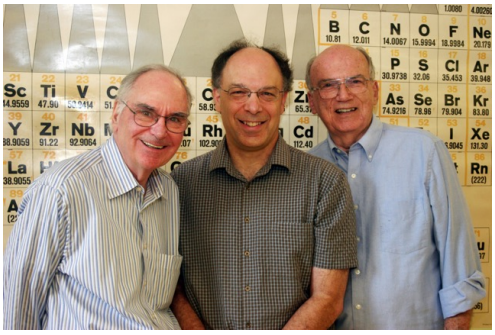
Where in the World is the POGIL Water Bottle?

From humble origins in Lancaster, PA, (713 College Avenue, right) POGIL has grown and expanded across the United States and around the world.

We're asking you to send us a picture of your POGIL water bottle wherever you may be to show the POGIL community the wide-ranging scope of our unique pedagogy (and our really cool bottle). Let's see how many places we can reach.

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

POGIL Kudos



Congratulations to **Frank J. Creegan**, the **W. Alton Jones Professor Emeritus at Washington College**; **Rick Moog**, Professor of Chemistry at **Franklin & Marshall College**; and **James Spencer**, the **William G. and Elizabeth R. Simeral Professor Emeritus at Franklin & Marshall College** were named the recipients of the **2015 James Flack Norris Award** from the Northeastern Section of the American Chemical Society (NESACS). This honor is awarded to teachers of chemistry at any level whose efforts have had a wide-ranging effect on chemical education. It will be presented to the trio in November in Boston.

POGIL Project Director Rick Moog was recently named the recipient of the **2016 George C. Pimentel Award in Chemistry Education** from the American Chemical Society. Moog is the fifth "POGIL-er" (the award has been given only 67 times since 1952) to earn this award since 2005 and the third Franklin & Marshall College faculty member. This honor is given to educators for outstanding contributions to chemical education such as training professional chemists; the dissemination of reliable information about chemistry to prospective chemists, members of the profession, students in other fields, and the general public; and the integration of chemistry into the educational system.

Virginia Commonwealth University recognized **Sally Hunnicutt** with its **Distinguished Teaching Award.** Hunnicutt is one of the first professors to use POGIL in a large class and pushes the students not only to learn chemistry, but also how to solve problems and assess information.

Kathleen Dwyer of Maplewood Richmond Heights HS received the **Presidential Award for Excellence in Science and Mathematics Teaching**. This award is presented to outstanding K-12 science and mathematics teachers across the country.

Continued on page 4

Diane Bunce (Catholic University), Renée Cole (University of Iowa), Jennifer Lewis (University of South Florida), and **Dan Libby (Moravian College)** were all recognized as **Fellows of the American Chemical Society**. Bunce was recognized for contributions to both the teaching of chemistry and the advancement of chemistry education research. Cole was recognized for chemistry education research focused on the design and assessment of instructional materials and teaching strategies and connecting research to practice. She has also co-edited two books on chemistry education research methods. Jennifer Lewis contributed significantly to research in chemistry education by introducing measurement standards for instrument development and conducting influential research on the impacts of curricular change. Dan Libby developed, with his undergraduate research students, a model system that provided the first direct evidence for a covalent intermediate in nicotinamide adenine dinucleotide dehydrogenase catalyzed reactions.

Uma Swamy of **Florida International University** received a Faculty Award for Excellence in Teaching from her institution. Swamy was the first to use a fully flipped classroom approach at FIU in conjunction with active learning in a large lecture setting in chemistry.

Patrick Brown of **East Tennessee State University** was awarded ETSU's University-Wide Award for excellence in teaching. This award is given to one faculty member each year whose work is acknowledged as "distinctive and exemplary."

POGIL Travels the Globe

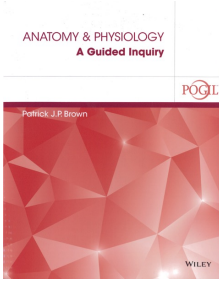
Kelly Butler of **Chestnut Hill College** is spending 2015-2016 as Fulbright-Nehru Scholar at VNR-VJIET, (IET, Institute of Engineering & Technology) an engineering college in Hyderabad, India. **Clif Kussmaul** (**Muhlenberg College**) spent parts of July and August in India. Kelly and Clif led a ½- day workshop at VNR VJIAS (IAS, Institute of Arts & Sciences), also in Hyderabad, a 1-day workshop at Gandhi Institute of Technology & Management (GITAM) in Vizag, and a 5-day workshop at Aditya Institute of Management & Technology (AITAM) in Tekkali. In summer 2012, Kelly, Clif, and **Dan Libby (Moravian College)** led a multi-day POGIL workshop at VNR-VJIET.

Sandhya Kode (**Director of EnhanceEdu, IIIT-Hyderabad**) has played a central role making connections and organizing events. Sandhya and two VJIET faculty members, Jyotsna Cherukuri and Bhanusree Koduru, visited the US in January 2012 to attend POGIL Facilitator Training, and Sandhya has attended several POGIL National Meetings. We hope to foster and support a few small teams of authors (same subject, multiple institutions), working toward a regional event during Summer 2016.

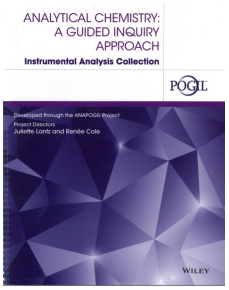
Laura Trout (Lancaster Country Day School) did 3-hour Intro to POGIL workshops in Auckland, Dunedin, Christchurch, and Tauranga, New Zealand. She also attended a 3-day BioLive workshop (Chemistry and Biology teachers) in Wellington. Trout was one of the keynote speakers and also presented several POGIL sessions at the workshop. She also did some personal touring around the country that included visiting Hobbiton, Rotorua, Franz Joseph Glacier, Waitomo Glow Worm Caves, Doubtful Sound, Queenstown (her personal "most beautiful place on Earth" winner so far) and the Trans Alpine railroad.

New POGIL Publications

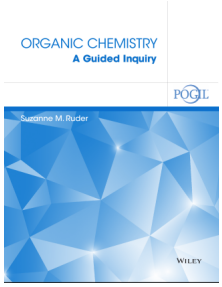
POGIL is pleased to announce two new sets of curriculum materials published by John Wiley & Sons and currently available at www.wiley.com.



Anatomy and Physiology: A Guided Inquiry
by Patrick J.P. Brown
Students Learn when they are actively engaged and thinking in class. The activities in this book are the primary classroom materials for teaching Anatomy and Physiology and sing the POGIL method. The result is an "I can do this" attitude, increased retention, and a feeling of ownership over the material.



Analytical Chemistry: Instrumental Analysis Collection
Juliette Lantz and Renée Cole, Project Directors
The ANAPOGIL consortium has added to its collection with this collection of 20 contains a full set of Electrochemistry, Spectrometry, and Chromatography activities. There are also activities for the more advanced topics in the Analytical Tools Category.



Coming soon!
Organic Chemistry: A Guided Inquiry
by Suzanne M. Ruder, Virginia Commonwealth University
These activities were written to cover most of the important concepts for a two semester organic chemistry sequence. The activities are grouped into organic 1 and organic 2.

Strategic Plan Update

We've made progress on our strategic plan and, now in year three! Here are some of the projects we've been working on:

Projects to Increase Inclusion

- A study of *POGIL Activities for High School Biology* with a focus on improving accessibility for English language learners, students with reading-related learning disabilities and students with low academic language proficiency.
- An outline for a book on using POGIL strategies when teaching students with learning disabilities is scheduled for the summer of 2016.
- A workshop on implicit bias for advanced POGIL practitioners as well as a baseline data project to help us assess our efforts to increase diversity.

For information, check out the Strategic Plan on POGIL's Website https://pogil.org/about/pogil-strategic-plan

Grant News

• **Clif Kussmaul (Muhlenberg College)** has received a National Science Foundation Improving Undergraduate STEM Education grant for "Collaborative Research: OpenPath - Improving Student Pathways to Computing Professions via Humanitarian Free and Open Source Software."

• **Juliette Lantz (Drew University), Renée Cole (University of Iowa)** and **Suzanne Ruder (Virginia Commonwealth University)** also received an NSF IUSE grant for "Collaborative Research: Eliciting and Assessing Process Skill in STEM."

Douglas to NSF

Congratulations to **Elliot P. Douglas (University of Florida)** who has been selected to be the Program Director for the Engineering Education Program for the National Science Foundation (NSF) for the coming year.

2015-16 POGIL Regional Coordinators

North Central (IA, IL, IN, MI, MN, SD, ND, NE, OH, WI)
Kristin Plessel, University of Wisconsin-Rock County
(kristin.plessel@uwc.edu)

Northeast (CT, DC, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV)
Steve Gravelle, St. Vincent College
(sgravelle@stvincent.edu)

Northwest (AK, ID, MT, OR, WA)
Laura Lavine, Washington State University
(lavine@wsu.edu)

Southwest—**SW** (AZ, CA, CO, HI, NM, NV, UT, WY)
Matt Horn, Utah Valley University
(hornma@uvu.edu)

South Central (AR, KS, LA, MO, OK, TX)
Gina Frey/Megan Daschbach, Washington U. in St. Louis
(gfrey@wustl.edu/daschbach@wustl.edu)

Southeast (AL, FL, GA, KY, NC, MS, SC, TN, VA)
Rob Whitnell, Guilford College
(rwhitnel@guilford.edu)

Please contact any of the Regional Coordinators if you have any questions about events or workshops in your region.

Welcome to POGIL!

The POGIL Project is pleased to welcome three new members to its National Office Staff.

Britton Miller joins the tam as the Development and Grants Associate. Britton has over 13 years of diverse nonprofit and government experience. She brings a belief in the power of education and a deep respect for teachers to her work.

Stacey (Whitaker) Wilson is the new Multimedia Specialist for The POGIL Project. She is responsible for managing the development and revision of paper-based instructional materials as well as overseeing the implementation of relevant technologies used to further the mission of The Project.

Elaine Ressel is the new Bookkeeper for The POGIL Project. Elaine handles accounts payable/receivable, journal entries; financial statement preparation; review of payroll; preparation of 1099s; reconciliation of bank/credit card statements; and organization and maintenance of filing system.

POGIL Published Works

Integrating Information Literacy, the POGIL Method, and iPads into a Foundational Studies Program

C. Moore, J. Black, B. Glackin, M. Ruppel, & E. Watson
The Journal of Academic Librarianship 41 (2015), p. 155- 169

ABSTRACT: This article provides an overview of the design, implementation, revision and informal assessment of an information literacy curriculum embedded in a new University Foundations (UF) program at a mid-sized public university. The library information literacy sessions incorporated team-based learning and Process Oriented Guided Inquiry Learning (POGIL) elements using iPads. Each session provided students an opportunity to develop and apply information literacy skills, and included critical thinking questions, which led students to think about underlying concepts. A focus group with the librarians assessed the UF library curriculum, its impact on student engagement, and the training activities for librarian teaching preparation.

Leading the Way: Changing the Focus from Teaching to Learning in Large Subjects with Limited Budgets

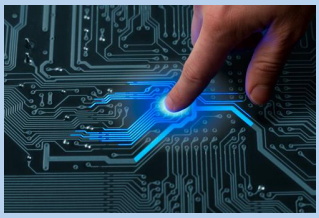
K. Fildest, T. Kuit, G. O'Brien, L. Keevers, & S. Bedford
The International Union of Biochemistry and Molecular Biology (2015), 43(2), p. 88-99

ABSTRACT: To lead positive change in the teaching practice of teams that service large numbers of diverse students from multiple degree programs provides many challenges. The primary aim of this study was to provide a clear framework on which to plan the process of change that can be utilized by academic departments sector wide. Barriers to change were reduced by adapting and utilizing Kotter's principals of change specifically by creating a sense of urgency and defining a clear goal designed to address the problem. Changing attitudes involved training staff in a new teaching and learning approaches and strategies, and creating a collaborative, supportive team-based teaching environment within which the planned changes could be implemented and evaluated. As a result senior academics are now directly involved in delivering sections of the face-to-face teaching in the new environment. Through promoting positive change we enabled deeper student engagement with the theoretical concepts delivered in lectures as evidenced by favorable student evaluations, feedback, and improved final exam results. A collaborative team-based approach that recognizes the importance of distributed leadership combined with a clearly articulated change management process were central to enabling academics to design, try, and evaluate the new teaching and learning practices. Our study demonstrates that a concerted focus on "change management" enabled teaching team members to adopt a major shift in the teaching and learning approach that resulted in measurable improvements in student learning.

POGIL Joins Forces with

Google

The Google Education and University Relations Fund of Tides Foundation provided a grant that has allowed the POGIL Project to partnered with Google to create a coordinated professional development experience for high school computer science teachers in the Philadelphia area to help implement a new Computer Science Principles course. The Project will train 20 high school teachers over a 1-year period in the POGIL methodology and Computer Science Principles course that utilizes POGIL's new CS activities. With the help of Google's apps such as Google Hangouts, the participants will be able to share ideas and practices with each other thus creating a learning community for computer science teachers.



POGIL Published Works *Continued from page 8*

Teaching Students to Read the Primary Literature Using POGIL Activities
T. Murray
The International Union of Biochemistry and Molecular Biology (2014), 42(2), p. 165-173

ABSTRACT: The ability to read, interpret, and evaluate articles in the primary literature are important skills that science majors will use in graduate school and professional life. Because of this, it is important that students are not only exposed to the primary literature in undergraduate education, but also taught how to read and interpret these articles. To achieve this objective, POGIL activities were designed to use the primary literature in a majors biochemistry sequence. Data show that the students were able to learn the content from the literature without separate activities or lecture. Students also reported an increase in comfort and confidence in approaching the literature as a result of the activities.

Translating across macroscopic, submicroscopic, and symbolic levels: the role of instructor facilitation in an inquiry-oriented physical chemistry class
N. Becker, C. Stanford, M. Towns, & R. Cole
Royal Society of Chemistry (2015), *Chemistry Education Research and Practice*

In physical chemistry classrooms, mathematical and graphical representations are critical tools for reasoning about chemical phenomena. However, there is abundant evidence that to be successful in understanding complex thermodynamics topics, students must go beyond rote mathematical problem solving in order to connect their understanding of mathematical and graphical representations to the macroscopic and submicroscopic phenomena they represent. Though traditional curricular materials such as textbooks may provide little support for coordinating information across macroscopic, submicroscopic, and symbolic levels, instructor facilitation of classroom discussions offers a promising route towards supporting students' reasoning. Here, we report a case study of classroom reasoning in a POGIL (process-oriented guided inquiry learning) instructional context that examines how the class coordinated macroscopic, submicroscopic, and symbolic ideas through classroom discourse. Using an analytical approach based on Toulmin's model of argumentation and inquiry-oriented discursive moves framework, we discuss the prevalence of macroscopic, submicroscopic and symbolic-level ideas in classroom reasoning and we discuss how instructor facilitation strategies promoted reasoning with macroscopic, submicroscopic, and symbolic levels of representation. We describe one sequence of instructor facilitation moves that we believe promoted translation across levels in whole class discussion.

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 an event request at https://pogil.org/contact/enter-request or email Marcy Dubroff at mdubroff@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 mdubroff@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.

The POGIL Inquirer

The POGIL Project

Box 3003

Lancaster, PA 17603