

The POGIL Inquirer

In the Spotlight

Amy Hanson and Suzanne Ruder honored.

See Ruder's story on P. 6 and Hanson' story on P. 8



From The POGIL Project Director



As the summer draws to a close, I am able to look back on the events of the past several months with great pride, and with the knowledge that much of what we have accomplished is due to the commitment and contributions of all members of the POGIL community. At the POGIL National Meeting in June we began the process of developing a 5-year strategic plan for The POGIL Project, and the Steering Committee has continued this work over the summer, led by

Susan Shadle and Andy Bressette. We will be soliciting feedback from many of you over the coming months, with a goal of having the plan in place before next summer.

As you will see in other places within this newsletter, there are several new "affiliated projects" that are now underway. We hope to keep you informed about the progress that these groups, and our continuing partners, are making through this newsletter and our web site.

Our heartiest congratulations go to Amy Hanson of East High School in Denver, CO, who was recently named a recipient of the 2011 Presidential Award for Excellence in Mathematics and Science

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Upcoming POGIL Events

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|----------------|---|
| Oct. 15 | Lancaster-Lebanon IU-13,
Lancaster, PA |
| Nov. 3 | Rockhurst University,
Kansas City, MO |
| Nov. 6 | Toms River Regional
Schools, Toms River NJ |
| Nov. 17 | Mount Mary College,
Milwaukee, WI |
| Jan. 18 | Independent Schools
Association of the
Central States, Chicago,
IL |
| Jan. 12-
14 | Facilitation Workshop,
Myrtle Beach, SC |

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

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Ask The Mole

Q: What is the Learning Cycle?

A: The learning cycle is an inquiry strategy for teaching and learning that is based on constructivist principles. A.E. Lawson describes a learning cycle consisting of three phases:

Exploration – a phase in which a pattern of regularity in the environment or data (collected by students, or presented to them directly) is sought. Students generate hypotheses and test them in an attempt to explain or understand this information.

Concept Invention – a "term introduction" phase in which a concept is developed from patterns in the data and a new term is introduced to refer to these newly identified trends or patterns. By have the "term introduction" phase follow the Exploration phase, new terms are introduced at a point when the student has already constructed their own understanding of the concept to which the term is then attached. This is in contrast to a typical lecture or textbook presentation in which terms are frequently presented or defined before examples of their use are given.

Application – a phase in which the just-developed concept is applied in new situations. This phase is intended to generalize the concept's meaning and applicability, frequently requiring deductive reasoning skills.

With this structure, a learning cycle experience guides students to develop concepts for themselves, promoting a sense of ownership and participation, and providing epistemological insight into the nature of scientific inquiry.

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



Clif Kussmaul Presents POGIL Workshop in India



Clif Kussmaul, Associate Professor of Computer Science at Muhlenberg College and PI for an NSF TUES project on POGIL in Computer Science, facilitated POGIL workshops in India, at the International Institute for Information Technology - Hyderabad, the VNR Vignana Jyothi Institute of Engineering & Technology, Hyderabad, and the Siddhartha Engineering College, Vijayawada.

Roughly 100 STEM faculty and 50 students participated. In India, there are not enough trained and experienced teachers to support student demand, and so there is strong interest in finding better ways to support student learning.

HSPI Happenings

Webinars

The newest complement to the available POGIL resources is a series of six webinars produced this year to introduce and support basic POGIL concepts. They were developed to extend themes relevant to the recently published HSPI materials, POGIL Activities for Biology and POGIL Activities for High School Chemistry. The webinar titles include: Classroom Arrangements and Facilitation, Course Structure and Alignment with Standards, Communication and Assessment, Activity Structure, Managing Group Dynamics, and Reporting Out and Making Connections. In these six webinars, current HSPI Partners and editors presented some of their successful POGIL implementation strategies and facilitated online discussions which appealed to both POGIL newbies and experienced practitioners. A special thanks to Pat Ligon, Amanda Zullo, Carrie Jacobus, Christine Sands, Melissa Hemling, and Leigh Foy for pioneering this new presentation approach! We hope to investigate this and other technology to make POGIL more accessible through both synchronous and asynchronous methods. The webinars are hosted on YouTube and can be accessed via this link: <http://www.pogil.org/high-school/hspi/hspi-webinar-series>.

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Process Oriented Guided Inquiry Learning

Two new books! **POGIL** **FLINN EXCLUSIVE**

Flinn Scientific is excited to join with The POGIL Project to publish the new series of student-centered learning activities for high school chemistry and biology.

- Create an interactive learning environment with specially designed guided-inquiry learning activities.
- Empower students to construct their own understanding of key concepts.
- Inspire passion and creativity for the learning process and problem-solving.
- Increase science content mastery and analytical reasoning skills simultaneously.

POGIL Activities for High School Biology, Book + CD **POGIL Activities for High School Chemistry, Book + CD**

Edited by Laura Trout 22 activities, 16 weeks, major concepts, Nature of Science, Biochemistry, Cell and Cellular Processes, Genetics, Evolution, Ecology, and Body Systems. Package includes a spiral-bound teacher's edition with complete learning activity, answer to all questions, and teacher-oriented notes with teaching objectives, knowledge prerequisites, assessment questions, and teaching tips. Comprehensive introduction to the nature of biological processes (HSPI). The paper, 8 1/2" x 11", soft cover CD contains electronic files of all student handouts.

Edited by Laura Trout 22 activities, 16 weeks, major concepts, Nature of Science, Measurements, Atomic and Electron Structure, Molecular Models, Names and Formulas, Bonding, Chemical Reactions, Thermodynamics, Kinetics, Equilibrium, and Biochemistry. Package includes a spiral-bound teacher's edition with complete student activity, answer to all questions, and teacher-oriented notes with teaching objectives and teaching tips. Comprehensive introduction to the nature of chemical processes (HSPI). The paper, 8 1/2" x 11", soft cover CD contains electronic files of all student handouts.

Free Sample Activities flinnsci.com

Visit the Flinn Web site at www.flinnsci.com to download sample activities for use in your classroom today. POGIL activities supply students with realistic laboratory situations followed by leading questions to guide their critical consideration of their own valid conclusions. Discover how a team-based learning environment empowers students and provides teachers with instant feedback about what their students understand and "misunderstand". Students can't pick up the message that logical thinking and teamwork are prized above simply getting "the correct answer".

Flinn Book Update

Get ready for two more books from Flinn Scientific and the HSPI Project. AP Biology should be released in October 2012 and Flinn is already accepting pre-orders via their website. The AP Chemistry book is still in progress with a tentative publish date of August 2013. Editor Laura Trout is looking for chemistry classroom testers who might be interested in trying some activities this year. If you would like to volunteer, please email Laura at troutl@lancastercountryday.org with your information.

The current Flinn books are selling well, with more than 1200 texts already sold!

PASCO

POGIL, in conjunction with PASCO, is preparing chemistry labs for classroom testing. These activities will be tested in a limited number of classrooms and testers have already been identified. We are hoping to release these activities for purchase in August 2013.

Rick Moog "Fuels" POGIL Interest in Buenos Aires



POGIL has always been known as a non-traditional pedagogy. Now it is moving into non-traditional venues as well. POGIL Project Director Rick Moog recently ran a series of workshops in Buenos Aires, Argentina, in a rather unconventional location — an old fuel tank on the campus of Universidad Tecnológica Nacional. Moog was visiting Argentina at the invitation of chemistry professor Rosario Soriano. In spite of Moog's limited Spanish (Soriano served as translator), the workshop was well-received. And "the acoustics were pretty interesting as well," he said.

Facilitation Workshop Planned for January 2013

Applications are now being accepted for a 3-day POGIL professional development workshop with a focus on workshop facilitation.

The workshop will take place January 12-14, 2013 in Myrtle Beach, S.C., and is designed for those who attended the 2011 and 2012 POGIL Regional Workshops, or those who have previous POGIL workshop experience and who are interested in becoming a skilled workshop facilitator.

The workshop will provide training in student-centered teaching techniques. Participants will be prepared and encouraged to run a ½ day inquiry-based learning workshop on their home campuses at the conclusion of this 3-day. Applicants must fill out the registration form located at (LINK) by clicking the "Register for this event" button located on the lefthand side of the page. They must then complete an additional application form that will be emailed upon receipt of the original registration request. The application form must be completed and returned to mdubroff@pogil.org or 717-358-4640 (fax) no later



<http://www.flickr.com/photos/40780016@N02/3915512588/>

POGIL Summer Workshops a Success

The summer workshop season has come and gone. The POGIL Project is thrilled at the number of people it reached with its workshops and presentations.

In addition to POGIL's six regional 3-day workshops in June and July, several 1-day workshops were held around the country for both high school and post-secondary instructors. POGIL also had a strong presence at organizational meetings, including the BCCE, ACS-NORM and the Agricultural and Applied Economics Association national meeting.

All told, more than 500 people attended POGIL events during the summer months, making this one of our most successful years to date. More events are scheduled for the fall, so check the website for a workshop coming soon to an area near you.

If you know of anyone who might be interested in booking a POGIL workshop, please have them email Marcy Dubroff at mdubroff@pogil.org

New Faces in the National Office



Spangler



Rathmell



Ferguson

The POGIL Project is happy to welcome three new members to its national office staff.

Aaron Spangler is a new Lancaster resident, and a recent graduate of Temple University, where he studied Political Science in the university honors college. He joins The POGIL Project as a development associate, working on finding grants for the organization to expand into new communities, populations, and subjects. He also works as a program assistant at Women's Campaign International, an organization operating out of Philadelphia that provides economic, political, and community trainings to women in developing nations around the world. In his spare time, Aaron enjoys watching and playing soccer, riding his bike, and writing and performing music with his folk band, The Vulcans.

Sarah Rathmell is the new Publications Assistant and Affiliated Project Liaison.

From the Director, continued from page 1

Teaching, the third member of the "POGIL family" to receive this prestigious honor. We are also proud of Suzanne Ruder of Virginia Commonwealth University, who was honored with the university's Distinguished Teaching Award, and Conrad Stanitski, a member of the POGIL Project Board of Directors, who was named the 2012 recipient of the ACS George C. Pimentel Award in Chemical Education.

For me, a highlight of my summer was a trip to Buenos Aires where I presented two POGIL workshops to high school and college faculty members. Fortunately, most of them were fluent in English, as my Spanish is essentially non-existent! Many thanks to Rosario Soriano, a long-time POGIL implementer and promoter, who invited me to Argentina and hosted this trip. There is a lot of interest in the POGIL approach in the area, and a real interest in some POGIL materials in Spanish!

Richard Smey

She attended Reading University in England where she majored in United States Studies and Social Biology, spending one semester at Lock Haven University, Pa. Most recently she worked in research and sales at a local sports flooring company. Before starting her new job at The POGIL Project, she volunteered at a local church teaching English to Burmese refugees. She is interested in becoming fluent in American Sign Language.

Ruth Ferguson joins the POGIL team as administrative assistant. She has worked in the education field for 11 years and previously worked as a medical illustrator in Chicago, spending two years as a medical illustrator and office manager for Medicom Audiovisual Company and later working as the medical illustrator for University Neurosurgeons and Northwestern Memorial Hospital, responsible for all artwork, macro and micro photography, exhibits and audiovisual presentations for teaching seminars. She also was responsible for the preliminary editing and production and coordination of art for a book on neurosurgery. She has worked as a freelance illustrator and participated in a variety of projects, including the "Consultation" television series. Ruth earned her B.S. in Biomedical Communications from the University of Illinois.

In the Spotlight

VCU's Suzanne Ruder Honored for Distinguished Teaching



Virginia Commonwealth University's 30th annual opening convocation recently honored outstanding faculty and recognized some of the university's best and brightest, including Suzanne Ruder. Ruder, who teaches organic chemistry, was one of the first in the nation to apply POGIL in a large classroom setting. Below are excerpts from Suzanne's remarks upon accepting the award.

Below are excerpts of Suzanne's remarks upon accepting the award:

I would like to spend a few minutes taking you through my journey as a teacher here at VCU. I have always found it curious that most of us who teach at the university level are generally thrust into the classroom with little to no formal education or training about how to teach. Prior to my own appointment as an Assistant Professor, I received no education about various teaching pedagogies or learning styles, and I had no awareness of the plethora of research that was available in the literature in the area of teaching and learning. As experts in our chosen fields, it seems that faculty are just expected to know how to impart our knowledge into the minds of the students in our classrooms. With a passion for our subjects, but little information about how to actually teach it, we mostly resort to teaching how we were taught.

And that is exactly how I began my teaching career, by teaching how I was taught. Nearly 25 years ago I started my career at VCU. I was passionate about organic chemistry, and eager to get into the classroom and help my students learn the subject that I found fascinating. My first teaching assignment was in a classroom of 150 students of organic chemistry. This was quite a bit different from my only experience teaching, when as a graduate student I taught just 24 students in a laboratory course. As many of you might know, organic chemistry has a rather poor reputation among students as far as courses go.

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For some reason, most students seem to think the course is excessively difficult and downright impossible. Not surprisingly, organic chemistry is rarely on the list of students' most favorite college classes. I thus entered my first classroom filled with 150 apprehensive organic chemistry students, who were more than likely just as terrified as I was that first day. They knew nothing about their new professor and of course there was no rate my professor dot com back then. Just as I had been taught, I proceeded to lecture with warp speed, keen to impart my knowledge onto the students. Students frantically rewrote my copious notes on the chalkboard, and attempted to write down everything I said. I covered all the material on the syllabus, and figured that the students understood it all, since I had told them all they needed to know, and few students asked questions during class time.

I happily improved on my lecture style for about 15 years, when I was struck and ultimately inspired by a comment from a scientist at a local pharmaceutical company. This scientist told a group of our visiting summer research students, that the most important skills for a prospective employee are 1) the ability to work in teams and 2) the ability to solve problems...two things, he said, that their academic experience did not prepare them for! As I reflected on my own classes, it dawned on me that he was absolutely right. My lecture classes taught the students nothing about teamwork, communication or the ability to think outside the box to solve problems that may not have one correct answer.

And hence I began anew, challenging myself to learn about teaching and learning, to discover how to engage the students and guide them to discover concepts together. My goal now is to help students learn so called 'soft skills' that are so important in the workforce, in addition to helping students gain a conceptual understanding of organic chemistry, rather than memorize lots of facts. My new guiding principle can be found in a quote by A.H. Johnstone: "Learning is not the transfer of material from the head of the teacher to the head of the learner intact. Learning is the reconstruction of the material, provided by the teacher, in the mind of the learner. "

These days my classroom, now grown to 300 students, is anything but a room filled with quiet students passively listening to my lectures. Instead students are thinking, working, discovering and engaging in animated conversations about organic chemistry concepts as they work together to solve problems. Some days you can even hear students cheering as they discover they have solved a problem. Every day is different and exciting, as I constantly assess what students are learning and what they are having trouble understanding in order to redirect and focus their work. It is rare anymore for students to pack up and race out of the classroom. Instead they linger on, discussing concepts and clarifying their answers with their classmates. My hope is that maybe, just maybe, organic chemistry has silently crept onto at least a few lists of students' most favorite college courses.

Denver's Amy Hanson Earns Presidential Award for Excellence in Mathematics and Science Teaching



(Denver, CO). The educators received their awards in Washington, D.C., this past summer

President Obama has named 97 mathematics and science teachers as recipients of the prestigious Presidential Award for Excellence in Mathematics and Science Teaching, including Amy Hanson of East High School

science and project-based assessments at various conferences, and she has facilitated sessions at regional meetings for the POGIL project. Amy is also a professional development leader for chemistry teachers in her school district, and she is a co-instructor for the Urban Partnership Science Institute.

Amy has a B.S. in biological sciences from the University of Denver and an M.S. in biological sciences from the University of Illinois at Chicago. She completed her teaching certification at Metropolitan State College of Denver and is certified in secondary science education.

"It is a privilege to have been nominated for this award that recognizes the importance of science education in preparing students to be global citizens. I am humbled to be part of such a distinguished group of educators who are committed to preparing scientifically literate students, many of whom will go on to become the next generation of scientists, and hope that this award will provide a way to continue to contribute in the field of science education," said Hanson.

The Presidential Award for Excellence in Mathematics and Science Teaching is awarded annually to outstanding K-12 science and mathematics teachers from across the country. The winners are selected by a panel of distinguished scientists, mathematicians, and educators following an initial selection process done at the state level. Each year the award alternates between teachers teaching K-6 grade and those teaching 7-12 grades.

Winners of this Presidential honor receive a \$10,000 award from the National Science Foundation to be used at their discretion. They also are invited to Washington, DC, for an awards ceremony and several days of educational and celebratory events, including visits with members of Congress and the Administration.

Hanson has taught Honors Chemistry and Advanced Placement Chemistry for the past 4 years at East High School in the Denver Public Schools. She spent the previous 4 years teaching science at West High School and the Denver Public Schools.

During her time at East High School, Amy has worked with her colleagues to implement project-based assessments and process-oriented guided inquiry learning (POGIL) activities in chemistry classes. Her students present an annual chemistry show at district elementary schools. She also sponsors the Science Olympiad team, providing an opportunity for students to pursue their interest in science at regional and state competitions.

Amy has presented sessions on inquiry-based

Last Day at the POGIL National Meeting

Do we look tired?



POGIL in The News

- Congratulations to Mare Sullivan of Bellevue Christian School for earning the High School Chemistry Teacher of the Year Award from the Puget Sound branch of the ACS. Mare's nomination will now proceed to the Northwest Region of the ACS.
- The Executive Council of the Spectroscopy Society of Pittsburgh (SSP) has awarded The POGIL Project \$5,000. The money is to be used for education and/or equipment and supplies involving the already existing aims of The POGIL Project. The Spectroscopy Society of Pittsburgh, along with its sister society, the [Society for Analytical Chemists of Pittsburgh](#), is a non-profit organization dedicated to furthering science education in the Western Pennsylvania region. To that end, with support from Pittcon - The Pittsburgh Conference, they support member education programs, teacher and student awards, a wide variety of educational programs, and grant programs for high schools, colleges, and beginning university professors.



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

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