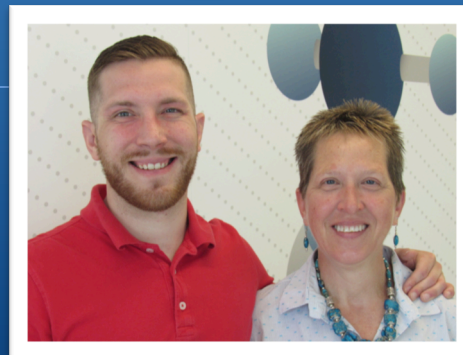


# The POGIL Inquirer

## In The Spotlight Gina Frey & Walter Buhro

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## From The POGIL Project Director



Dear Friends,

It has been a busy and productive summer. We kicked things off at our annual POGIL National Meeting with a focus on implementing our new strategic plan. I am excited by the direction that all of our working groups are taking and I encourage all of you to contact the National Office if you are interested in participating in one of those groups.

We also had a great trio of Summer Workshops in Boston, Columbus and Portland — each of those workshops was at capacity and it was great to see so many educators committed to transforming the way they teach. We also had our second annual NCAPP with a theme of Building Bridges/Breaking Barriers, and I hope the 90 people who attended came away as energized as I did. Finally, we held a dynamic Writers' Retreat in Baltimore and I am hopeful that the ideas and enthusiasm generated during that four-day experience will translate into some great new materials.

We are also thrilled to announce the publication of three new POGIL resources — Shawn Simonson's *POGIL: An Introduction to Process Oriented Guided Inquiry Learning for Those Who Wish to Empower Learners* (Stylus) and Mare Sullivan's *Activities for Earth & Space Science* and *Activities for Life Science*, both designed to support the NGSS (Flinn Scientific).

As we head into the fall, I want to wish all of you success in your classrooms. Please remember that one of the special things about The POGIL Project is its supportive community. The Project National Office is here to answer questions and to help connect you with other educators. Please feel free to reach out to us to update us on how you are doing and how we can help!

*Richard S. Moog*

## Upcoming Events

Aug. 21	Mount Mary University, WI
Oct. 19	NYS Master Teachers – Mohawk Valley
Nov. 2	NW Summit Meeting, Kirkland, WA
Nov. 22	Bakersfield College, CA
Dec. 13-14	NSTA Area Conference on Science Education, Seattle, WA
Jan. 11	NW Summit Meeting, Kirkland, WA
Jan. 18-20	Facilitator Training, Myrtle Beach, SC

**For more information on POGIL workshops, visit [www.pogil.org](http://www.pogil.org)**

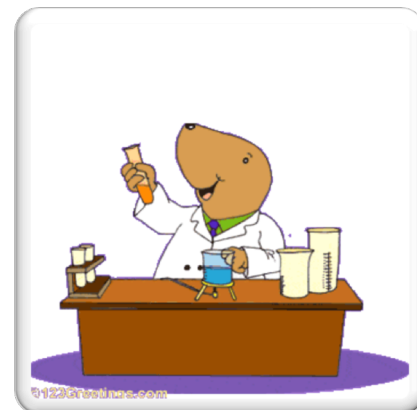


## Ask The Mole

**Q:** Why should I use POGIL activities?

**A:** When selecting and/or writing POGIL activities, an initial step is to think about why the activity is being used. A POGIL activity is designed to guide students as they construct a deep understanding of a concept and, at the same time, to help them develop process skills. A POGIL activity is appropriate for the following:

- A new and important concept, particularly a *threshold concept* (Meyer & Land, 2003) that students often struggle with, but must master to continue with the subject.
- A concept in which students are likely to be confused or struggle due to inexperience, lack of knowledge, or misconceptions.
- The start of a new unit or topic to orient students to new ideas, problems, or approaches.



Instructors should also recognize when *not* to use POGIL activities. Each activity is designed to be used by a team of students with active facilitation by an instructor. Thus, activities should not be assigned as homework or used without facilitation. In addition, POGIL activities may not be the best tool for reviewing concepts with which students are already familiar.

Excerpted from *POGIL: An Introduction to Process Oriented Guided Inquiry Learning for Those Who Wish to Empower Learners*, Edited by Shawn Simonson, Stylus Publishing, 2019.

*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](mailto:marcy.dubroff@pogil.org)*



## Where in the world is the POGIL water bottle?

Did your POGIL water bottle take a fabulous summer vacation? We'd love to see where our iconic bottle has traveled this past year!

Send us pictures of your bottle so we can find out where the bottle has gotten its passport stamped. Once again we will feature the photos on our website and on our Facebook page. 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](mailto:marcy.dubroff@pogil.org).*

## In the Spotlight: **Gina Frey & Walter Buhro**

*Washington University in St. Louis and West Morris Regional HS*



When Gina Frey's son, Walter Buhro, emerged from graduate school with an M.A. in experimental physics and a desire to teach, she wasn't necessarily surprised. What surprised Frey, who is a professor of general chemistry at Washington University and a veteran POGIL facilitator, is that her son, who loved listening to lectures and working on his own, embraced



active learning pedagogy: his polar opposite learning preference as a student.

"When he was growing up, he really loved to learn from lecture!" Frey laughs. But Buhro soon found that lecture didn't cut it in his physics classrooms, she says. His students simply didn't learn as well. "He tried some group work as a student teacher," Frey recalls, "but once he went to the POGIL regional workshop, he was hooked. All of a sudden, you're in this community of teachers who want to talk about teaching and learning, or who are willing to help you."

When asked, Buhro is slightly more pragmatic about his approach to POGIL. Active learning? That just comes down to the students, says Buhro, who is in his second year teaching physics at West Morris Regional High School in Chester, New Jersey. "Students are not used to sitting quietly and taking notes," Buhro explains. "That's already out. The kids will accept active learning, and they'll do whatever you hold them accountable to do."

Since Buhro is still relatively new to the profession, he says, finding enough POGIL activities in his discipline has been a challenge. "The biggest barriers to using a new philosophy or pedagogy are specific resources that I can use in a classroom," says Buhro, who also earned an M.A. in education. "Developing those is very time-consuming." Still, he's convinced that process-oriented learning is the key to making a lasting impression on physics students, and he's started implementing POGIL concepts in his lab activities.

Buhro says that he still faces occasional challenges in trying to steer students away from solving problems simply in order to get the right answers. "Because of the way we assess things, they get a perfectionist mentality, and that mentality is not good for POGIL," says Buhro.

*Continued on page 4*

*Continued from page 3*

"Students are very goal-oriented, but they're not process-oriented. I really like to see that students are constructing their own knowledge," Buhro continues. "Students have to interpret data and build concepts from that. I can tell that that's very important."

Buhro's observations have led to generative mother-son discussions about assessing process skills, and POGIL has become a way for them to connect with one another as educators. "We bonded a lot, talking about different methods, how to meet students where they're at, and how to get them to show you how they're learning," says Buhro. "It really is a conversation, it really is like he's learning from me, and I'm learning from him," confirms Frey.

"We've started to talk about how students solve problems, and the processes you can use to help students solve problems," Frey adds. "They're not high school students, but our students here sometimes have problems in walking through the steps. He has a stepwise strategy that has really had me thinking about what type of structure I put into my problems."

When Frey first adopted POGIL in her general chemistry classroom at Washington University, it was because she felt students needed more support in learning how to work in groups. Now, the chemistry department uses two methods: peer-led team learning and POGIL. "What it allowed us to do is teach our students how you really work in groups, how you solve a problem collaboratively," says Frey. "How you discuss the concepts and how you talk through the process and start not to worry so much about the answer, but why I'm solving the problem the way I am."

As a POGIL veteran, Frey has always been drawn to the way the community pushes facilitators to grow in their teaching, too.

"I know that I have colleagues all around and that we will work on projects together, and I'll meet them throughout the year," says Frey of her connection to the POGIL community. "It helps you grow in your understandings of the methodologies of how students learn and how we can improve our teaching."

—Kristen Evans

## Kudos!

**Kristen Drury** was honored as a “Shining Star” at SCOPE Education Services School District 18<sup>th</sup> Annual Awards Dinner. Drury was recognized to be an exceptional and dedicated educator for her work over the past 13 years, and has been a valuable contributor to her district’s New Teacher Institute.

**Anne Glenn** was presented with the award for Faculty Excellence in Advising Award by Guilford College this past April.

**Steven Gravelle** won the 2019 Wimmer Faculty Award at Saint Vincent College. Currently Gravelle serves as director of Saint Vincent’s Teaching Effectiveness and Mentoring Program. His recent professional activities have centered on improving teaching and learning in the sciences.

**Charity Lovitt** was named Associate Co-Director for First-Year and Pre-major Programs and Discovery Core. Lovitt will be responsible for training faculty who teach first-year students and will work to direct the curriculum for the entire first-year sequence.

**Heather Wilson-Ashworth** received the Presidential Award for Excellence in Engagement for her work with POGIL and her mentorship of faculty at Utah Valley University. It is the most prestigious award at Utah Valley University.

## New to POGIL



### POGIL

*An Introduction to Process Oriented Guided Inquiry Learning for Those Who Wish to Empower Learners (Stylus Publishing).*

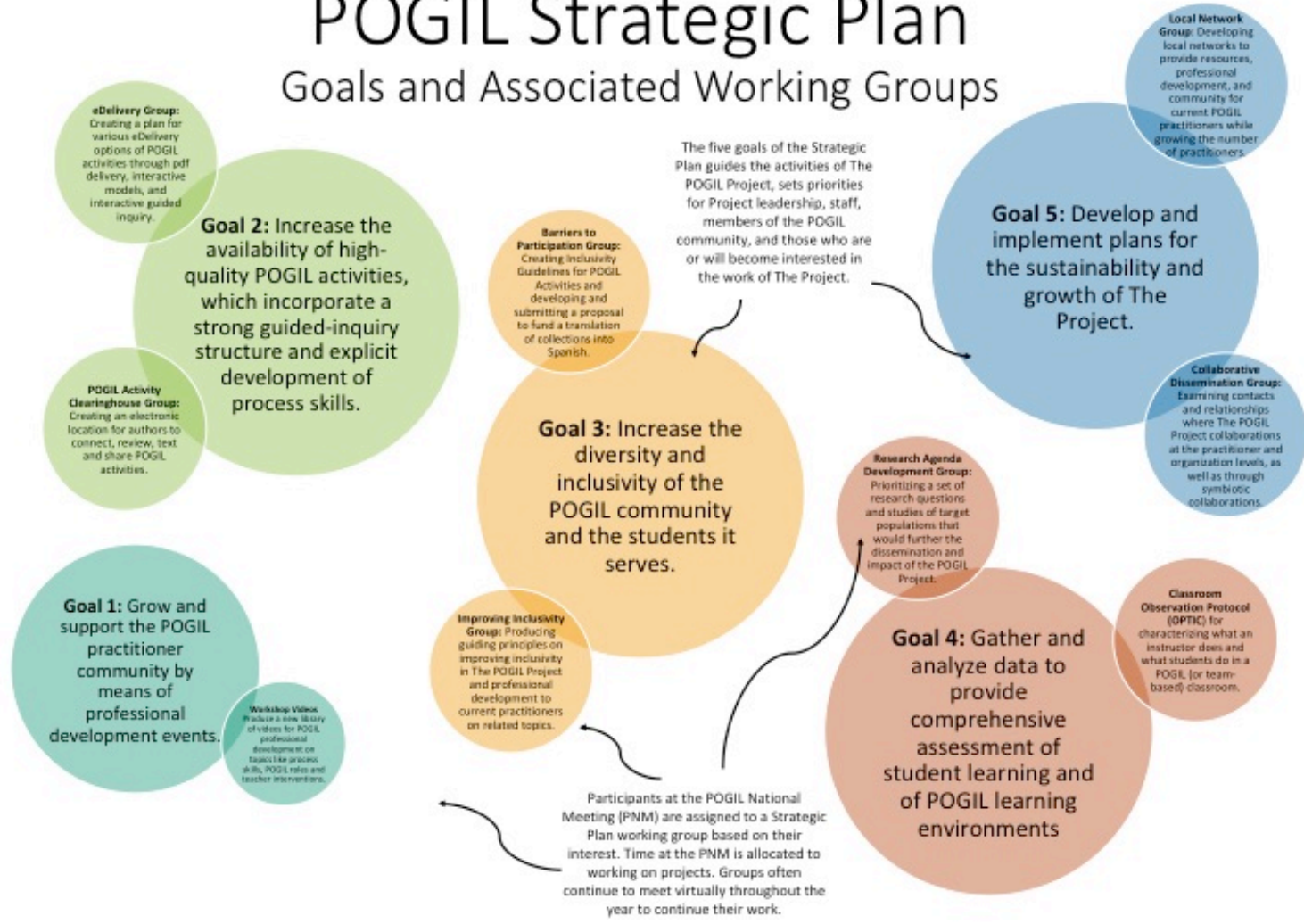
Edited by Shawn Simonson

The first part of this book introduces the theoretical and philosophical foundations of POGIL pedagogy and summarizes the literature demonstrating its efficacy. The second part of the book focuses on implementing POGIL, covering the formation and effective management of student teams, offering guidance on the selection and writing of POGIL activities, as well as on facilitation, teaching large classes, and assessment. The book concludes with examples of implementation in STEM and non-STEM disciplines as well as guidance on how to get started. Appendices provide additional resources and information about The POGIL Project.

To order this book, visit <https://styluspub.presswarehouse.com/browse/book/9781620365441/POGIL> and use the code **POGIL** to get a discount at checkout

# POGIL Strategic Plan

## Goals and Associated Working Groups



Want to get involved in a Strategic Plan working group? Take a look at the various goals and associated working groups above and contact the National Office if you are interested in learning more or joining one of the teams. Working groups meet throughout the year, and usually convene via Zoom for regular check-ins. Each team is led by a POGIL practitioner, and if you have any questions, the National Office can put you in touch with the chair of each working group so you can get more information.

Contact Marcy Dubroff ([marcy.dubroff@pogil.org](mailto:marcy.dubroff@pogil.org)) if you have questions.

## POGIL Published Works

### **Reflection on the Use of Process Oriented Guided Inquiry Learning in Science-focused English Classes**

*James Ellinger*

The Process Oriented Guided Inquiry Learning (POGIL) framework is a student-centered teaching method that has been used extensively to teach core science content while simultaneously developing process skills such as teamwork, critical thinking, and oral communication. The activities used in this approach follow a learning cycle that begins with exploration of a model, proceeds to concept or term invention, and is followed by application of the newly acquired knowledge. More than 15 years of research has validated the effectiveness of this method for improving student outcomes. The use of POGIL as a mode of instruction in science-focused English courses has not been directly investigated. This paper describes the observations of student engagement with class materials and learning outcomes following introduction of POGIL activities into two courses: a compulsory academic writing course for first year undergraduate students and an elective science-based Content Language and Integrated Learning (CLIL) course taken by first and second year undergraduate students at a national university in Japan.

*Eruditi 3, 29-40*

### **Refining Process-oriented Guided Inquiry Learning for Chemistry Students in an Academic Development Programme**

*Christine Mundy*

In this study, action research was used over two years to refine the implementation of process-oriented guided inquiry learning for chemistry students in an academic development programme at a research-intensive South African university. Students' responses to guided inquiry were collected based on a three-pillar framework underpinned by cognitive load theory and the information processing model. A mixed methods approach was used to gather data including observations, questionnaire responses, focus group interviews and student assessment results. The findings were exhibited year by year using the analysis tool, 'joint displays'. Findings from the first year of study highlighted student difficulty with factors contributing to extraneous load such as social dynamics, worksheet layout and time required. Revisions addressed these areas of difficulty in the second year with positive results in terms of student behavior and achievement. Analysis of Year 2 findings led to several recommendations for further guided inquiry revisions to serve novice students in the context of an academic development programme: prior knowledge should be activated to mitigate cognitive overload, relevant language should replace foreign terms to sensitize the perception filter and more explicit scaffolding could be embedded to enrich the student's germane cognitive load during processing.

African Journal of Research in Mathematics, Science and Technology Education DOI: [10.1080/18117295.2019.1622223](https://doi.org/10.1080/18117295.2019.1622223)

### **Special Session: Process Skills in Computer Science**

*Helen H. Hu, Chris Mayfield, Clif Kussmaul*

Process skills (also known as professional skills, lifelong learning skills, workplace skills, transferable skills, or soft skills) are an important aspect of computer science education. Learning objectives for computer science courses often include the development of process skills like critical thinking, problem solving, and teamwork, but many instructors struggle with how to encourage and measure the development of these skills. This special session will introduce detailed rubrics for assessing process skills in a manner that will model POGIL (Process Oriented Guided Inquiry Learning) facilitation techniques. Presenters will demonstrate how to use one set of these rubrics in an active learning classroom (i.e., POGIL) to provide students with feedback. The other set of rubrics assess process skills on student work and can be used with any classroom. Attendees will leave the session with a better understanding of key process skills in computer science, how to assess student interactions and student work for these skills, and how a POGIL classroom facilitates the development of critical thinking, information processing, and teamwork. This special session will appeal to any K-12 teacher or college instructor interested in developing students' process skills in a computer science class.

SIGCSE '19, Proceedings of the 50<sup>th</sup> ACM Technical Symposium on Computer Science Education, pages 171-172. Minneapolis, MN, USA, February 27-March 2, 2019



## POGIL Implementation Guides are here!

This digital guide explains POGIL® implementation and provides tips for running a successful POGIL lesson. With POGIL, students work on carefully crafted guided inquiry activities that are scaffolded to help students master content and develop life and learning skills. Use this guide and POGIL role cards (AP9841) for clear expectations and a smooth activity.

<https://www.flinnsci.com/pogil-implementation-guide/ap10647/>

### POGIL Summer Coordination Team

**Debra Driscoll**

University of Texas at El Paso – MaST Academy

**Joyce Easter**

Virginia Wesleyan University

**Brandon Fetterly**

University of Wisconsin Colleges

**Tim Herzog**

Weber State University

**Dan Libby**

Moravian College (retired)

**Tracey Murray**

Capital University

**Stephanie O'Brien**

Commack School District, NY

**Michelle Poletski**

Newburg School District

**Shannon Wachowski**

University of Wyoming

## POGIL ESeries Returns this Fall

The POGIL ESeries will return this fall with a great lineup of web professional development offerings. This year, we will also be hosting a number of free webinars with chapter authors from the new POGIL book.

**Visit the POGIL website for exact dates and registration information.** The topics this year include:

Interview with Shawn Simonson (editor of the new POGIL book)\*

Non-Compliance

Effective Groups \*

Process Skills

Mini-POGIL

Facilitation \*

NGSS

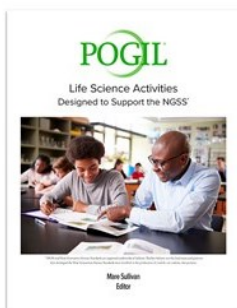
Assessment \*

\* free webinar



## New Middle School Books Available this Fall

The POGIL Project and Flinn Scientific have partnered to produce two new activity collections edited by Mare Sullivan:



**POGIL® Activities for Life Science—Designed to Support the NGSS**

**POGIL® Activities for Earth and Space Science—Designed to Support the NGSS**



You can purchase the books at <https://www.flinnsci.com/>



## Parting shots

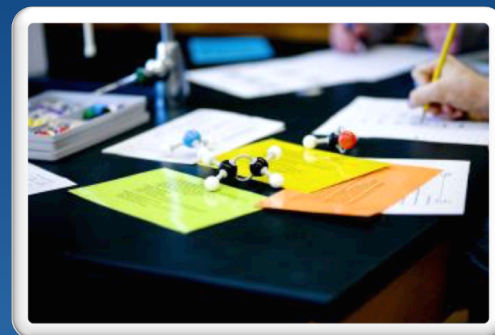
Thanks to our excellent photographer and videographer, Tim Brixius, we have lots of photos from both PNM and NCAPP this summer. Above, the PNM crew gathers on the steps of the DUC at Washington University in St. Louis in early June. At right, the NCAPP attendees pose for a pre-dinner photo outside College Hall, also at Washington University.



## 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](mailto: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](mailto: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](https://twitter.com/POGIL).

# POGIL

## The POGIL Inquirer

The POGIL Project

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