Introduction to POGIL: The Fundamentals

Welcome!
Please sit in groups of three or four, with people you do not know, and make the groups as heterogeneous as possible.
Getting Started

Managers: Look in the red folder. Read and carry out the **Instructions to Managers**.
Objectives and Outcomes

This session is designed for those with limited or no previous exposure to POGIL.

Participants will:

• Engage in POGIL activities
• Observe facilitation strategies
• Learn about POGIL implementation at other schools
• Discuss common barriers to implementation
After attending this session, participants will be able to:

• Name crucial elements of POGIL pedagogy and philosophy
• List desirable student learning outcomes from a POGIL classroom
• Create strategies to begin implementing POGIL in their classrooms
The POGIL Project

• Launched by sequential National Science Foundation (2003-2012) and other grants
• Based on curricular work done by a variety of like-minded people in the mid-1990s
• Became a not-for-profit organization in 2010
• The mission of The POGIL Project is to connect and support educators from all disciplines interested in implementing, improving, and studying student-centered pedagogies and learning environments.
The POGIL Project

• The POGIL Project is run by:
  • A Board of Directors
  • A Director (Rick Moog, Franklin & Marshall College)
  • A Steering Committee of experienced practitioners (eight college and high school faculty)
  • Eight part-time and full-time staff in POGIL National Office (Lancaster, PA)
The POGIL Project

• Offers faculty development
  – More than 20 workshops each year for high school and college faculty
  – Institutes for workshop facilitators
• Actively involves almost 1,000 individuals each year
  – Workshop attendees, workshop facilitators, curriculum developers
• Has touched thousands of people
  – More than 1,000 people are implementing POGIL pedagogy across multiple disciplines
Drawing Activity

The facilitator will describe a pattern. You will draw it based on the description

• Work alone - do not talk
• Do not look at each other’s papers
• You may want to take notes as instructions are provided
Draw a parallelogram that is:

• skewed 45 degrees to the right
• with height = 2 inches
• with width = 4 inches
Draw a symmetrical Venn diagram consisting of three one-inch diameter circles

- Center it in the middle of the parallelogram
- The Venn diagram should show an area in the middle where all three circles intersect
Draw a Star of David to the left of the Venn Diagram.

• It should consist of two equilateral triangles with 1 inch edges
Draw a Peace Sign

Draw a peace sign, with a diameter of one inch, to the right of the Venn diagram.
Draw a Sine Wave

Draw a sine wave above the parallelogram
• Its amplitude should be one inch
• It should start at the top left corner of the parallelogram and end at the top right corner of the parallelogram
• It should complete exactly three cycles
Rate Your Confidence Level 1-10

- On a scale of 1 to 10, how confident are you that your drawing is correct?
  - 1 = not at all confident
  - 10 = very confident
- Write your rating on the back of your paper large enough that it can be seen by the facilitator at the front of the room.
Now Work as a Team

- Do not make marks on your original drawings.
- Take out a clean piece of paper. The recorder will be the official "drawer".
- Work together to draw the pattern described:
  - Use all your notes and original drawings
  - You may ask questions of the facilitator (raise your hand if there is a question)
  - Consult with other teams if you wish
  - Do not consult outside resources (e.g., web)
- Each team must produce ONE CONSENSUS DRAWING

5 Minutes
Rate Your Confidence in Your Team

- How confident is your team that your drawing is correct?
  - 1  = not at all confident
  - 10  = very confident
- Write your team's rating on the back of your team drawing large enough that it can be seen by the facilitator at the front of the room
Grade Your Drawings

- Compare both your individual and team drawings to the solution shown
- Assign each of your drawings a grade of A - F

1 Minute
Lessons from the Parallelogram Activity

• Individually write down three ways the team drawing experience differed from the individual drawing experience
• Individually write down one insight about how this may relate to teaching and learning

2 Minutes
Lessons from the Parallelogram Activity

• As a team, share your experiences and insights
• Be prepared for the Presenter to share one agreed upon insight from your team

5 Minutes
Parallelogram Activity Reporting Out

Report Out
A POGIL Classroom Experience
Comprehension Question

Assume that in Model 2 the Pension Fund purchases insurance for $2 billion/year from Bank B. In this case, how much profit or loss will the pension fund have made at the end of five years, assuming that Bank A fulfills its obligation?

1. $10 billion profit
2. $5 billion profit
3. $2.5 billion profit
4. $0 profit
5. $10 billion loss
Whole Class Discussion

Incorporate reporting out of answers in a POGIL classroom.
Reflectors, report to your group:

• One strength of the group and why it is important for an effective group

• One area of improvement for the group and a possible way to make it (2 minutes total)
Sharing Your Reflector’s Report

Any volunteers willing to share your Reflector’s Report with the workshop participants?
Other than content knowledge, what might your students gain from this type of learning environment?

- Individually: 1 minute
- Group: 3 minutes
- Presenters report out
What is POGIL?

Process Oriented Guided Inquiry Learning
What is POGIL?

Process Oriented
(Cooperative Learning):
Develop Key
Process Skills

Process Oriented
Guided Inquiry
Learning
Process Skills

- Information Processing
- Critical Thinking
- Problem Solving
- Communication
- Teamwork
- Management
- Assessment
What is POGIL?

Guided Inquiry (Constructivism): Learning Cycle Activities

Process Oriented Guided Inquiry Learning
What is POGIL?

- Process Oriented (Cooperative Learning): Develop Key Process Skills
- Guided Inquiry (Constructivism): Learning Cycle Activities
Information Processing Model

Constructivist Model of Learning

• “Learning is not the transfer of material from the head of the teacher to the head of the learner intact, (but) the reconstruction of material in the mind of the learner.”

• “It is an idiosyncratic reconstruction of what the learner . . . thinks she understands, tempered by existing knowledge, beliefs, biases, and misunderstandings.”

New Paradigm

• Knowledge results only through **active participation** in its construction.
• Students teach each other and they teach the instructor by revealing their understanding of the subject.
• Teachers learn by this process . . . by steadily accumulating a body of knowledge about the practice of teaching.

**Teaching is enabling.**
**Knowledge is understanding.**
**Learning is active construction of subject matter.**

Guided Inquiry Approach

• Students work in groups
• Students construct knowledge
• Activities use the Learning Cycle paradigm
• Students teach, discuss and learn from other students
• Instructors facilitate learning
Meta-Activity: Process Skills

- Complete page 1 and wait for your assignment for Model 2 (8 min.)
- Report out (4 min.)
Meta Activities

The instructor in the classroom facilitates the development of process skills

• Complete the Meta Activity: Classroom Facilitation (6 min)

• Report out
Exploring the POGIL Activity Structure

Complete Meta Activity: Activity Structure

• Complete embedded “Sweet and Salty” activity (questions A - N)
• Complete questions 1 - 8
• Report out
• Parallels the “scientific method”
• Provides context for introduction of new terms
• Explicitly provides opportunities for critical thinking


Questions?

• Take one minute to write down any questions that you have, then think about which question is most important to you.
• As a group, take three minutes to discuss your questions and come up with a list of up to three questions you would like to ask, in rank order of importance.
• Answers to many questions are in the blue booklet.
Wrap Up