Using POGIL to teach Computer Programming
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Problem:
While teaching Javascript in my web development class, I noticed that many students were able to complete a programming project but were unable to explain fundamental details about the code.

Initial Solution:
As a result, I started to use worksheets that let students analyze a program in great detail with mostly directed questions.

Final Solution:
I decided to use POGIL in my Computer Programming II class where students were having great difficulty connecting the Object-Oriented Programming (OOP) concepts to OOP Java code. POGIL seemed like a fit as students can learn the code while discovering the concepts.

What is POGIL?
Process Oriented Guided Inquiry Learning
- Small groups
- No lecture
- Instructor = facilitator.

What is Guided-Inquiry Learning?
Scientific method with instructor designed materials

What are the Processes?
Cognitive and Affective
- acquire, interpret, and apply knowledge.
- Teamwork
- Oral and Written Communication
- Team Management
- Information Processing
- Critical Thinking
- Problem Solving
- Assessment

POGIL Learning Cycle

Learning Cycle Questions
Exploration: Includes directed questions e.g. What is the data type of variable x in line 2?
Concept Invention: Concepts are introduced e.g. Is it possible for two objects to have different values for the same property? Why?
Application: Programming problem in a new context

What are the typical roles?
Typical roles:
- manager,
- recorder,
- spokesperson and
- reflector
(flexible / modifiable to suit your class and style)
Example: I generally use 2-3 students in a team with the roles of recorder (writes on the worksheets), spokesperson (asks questions to the instructor during activity), and coder (writes code/operates computer).

How do I use POGIL?
- Not for all classes or for all topics
- Use when most beneficial for student learning

1. Full POGIL with no lecture for teaching OOP coding and concepts
2. Light POGIL. Guided-inquiry with lecture. Students can work in teams (with roles) or individually (with think-pair-share). Using it for teaching selected topics in Javascript and SQL.