

Exploring the Impact of POGIL on Student Engagement

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Research Questions

- How does student engagement affect learning?
- What do instructors and students do during POGIL and interactive lecture classes?

Research Approach

- Observe classes (live and recorded) in the first, second, and third month
- Triangulate data from observations with instructor and student surveys

Data Collection

- App: optickussmaul.org
- Tap observed codes each minute

Start

Observe

Report

Help

Observe

PHOTO

POSITION

Comment(s)

comment?

Student Focus:

Solo

Pair

Team

Teams

Class

Instructor Focus:

Solo

Pair

Team

Teams

Class

Student Action:

Answer

Ask

Discuss

Speak/Lecture

Manage

Distracted

Watch/Listen

Work

Instructor Action:

Answer

Ask

Discuss

Speak/Lecture

Manage

Distracted

Watch/Listen

Work

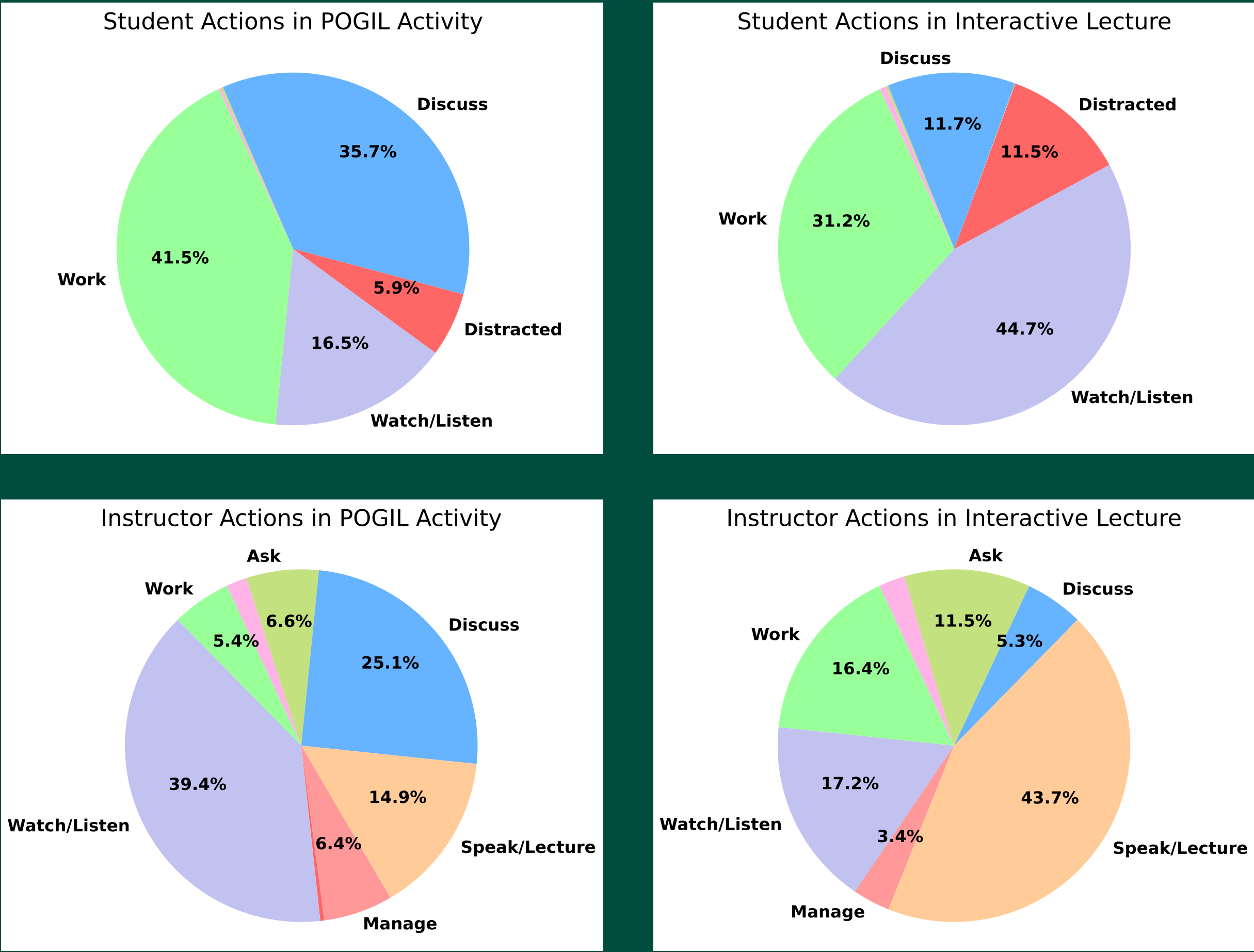
Students are more engaged with POGIL than interactive lectures taught by the same instructors.

Focus & Action of Students & Teachers
Observation Protocol (FASTOP)

Focus Code	Student Focus	Teacher Focus
Solo	Students act alone.	Teacher with one student.
Pair	Students act in pairs.	Teacher with a pair of students.
Team	Students act in teams/groups (3–5).	Teacher with student team.
Teams	Students act across or between teams.	Teacher with multiple teams.
Class	Students act as a whole class.	Teacher with the whole class.
Action Code	Student Action or Teacher Action	
Answer	Answer question(s) posed by other(s).	
Ask	Ask question(s) and wait for other(s) to answer.	
Discuss	Talk back and forth (more than one question and answer).	
Speak/Lecture	Talk by one person with no interaction.	
Manage	Pass out or collect papers, assign groups, take attendance.	
Distracted	Distracted or off task.	
Watch/Listen	Watch or listen (e.g., to lecture or presentation).	
Work	Write, take notes, work on a computer, etc. (not ask, answer, or discuss).	

- Suitable for a variety of pedagogical approaches
- Low-level practices can reveal insightful details
- See the [ASEE 2023 Paper](#) by Kussmaul et al.

Spring 2023 Classroom Observations



- 2 public universities (1 PWI and 1 MSI)
- 6 sections of CS1 course (300+ students)
- 6 classroom observations in each section
- Coded each minute (24,000+ total codes)

Student Self Report of Engagement Activities

	POGIL Activity		Interactive Lecture	
	Very Often	Often	Very Often	Often
Worked with other students during class time	16.0%	58.4%	7.4%	41.4%
Asked questions during class or contributed to class discussions	59.9%	28.4%	17.1%	34.1%
Tutored or taught the class materials to other students in the class	7.3%	18.6%	3.3%	9.8%



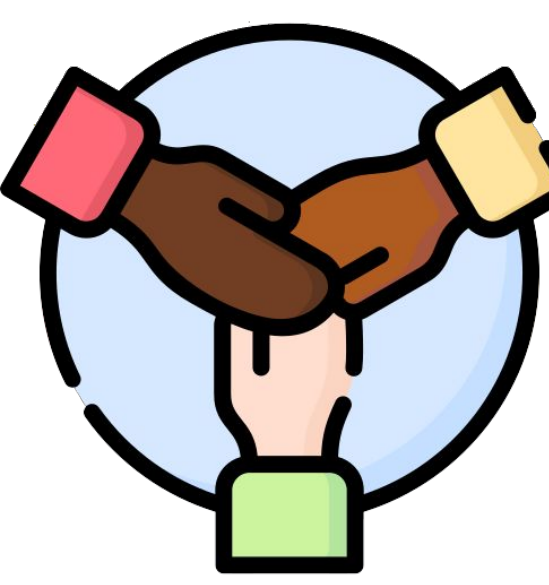
To learn more about POGIL, visit pogil.org. To learn more about our project, visit introcspogil.org. This work was supported by the National Science Foundation under award [DUE 2216454](#).

What is POGIL?

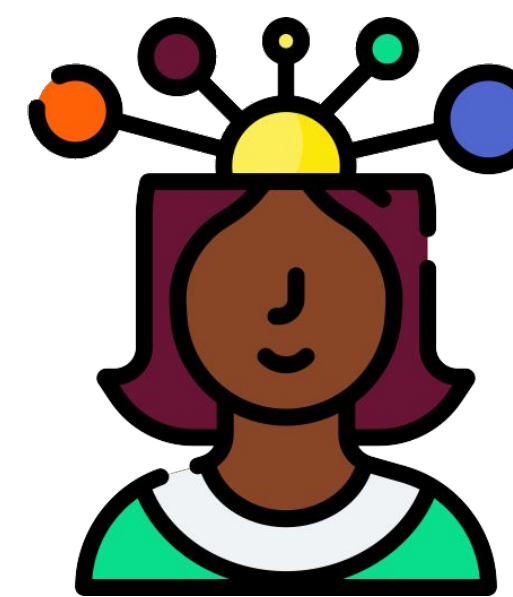
PO = Process Oriented



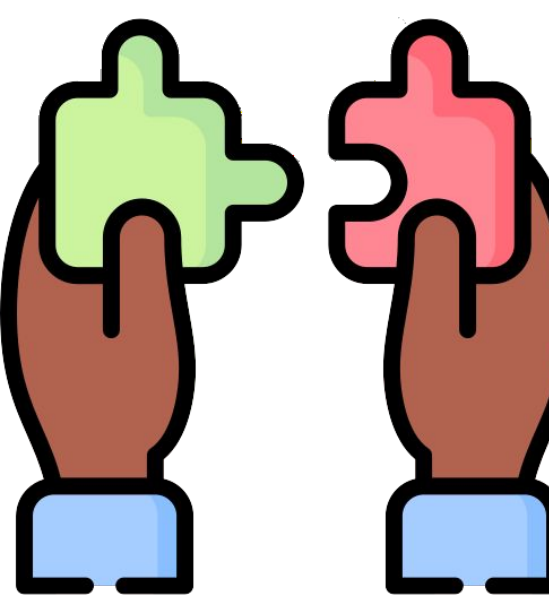
Interpersonal
Communication



Teamwork

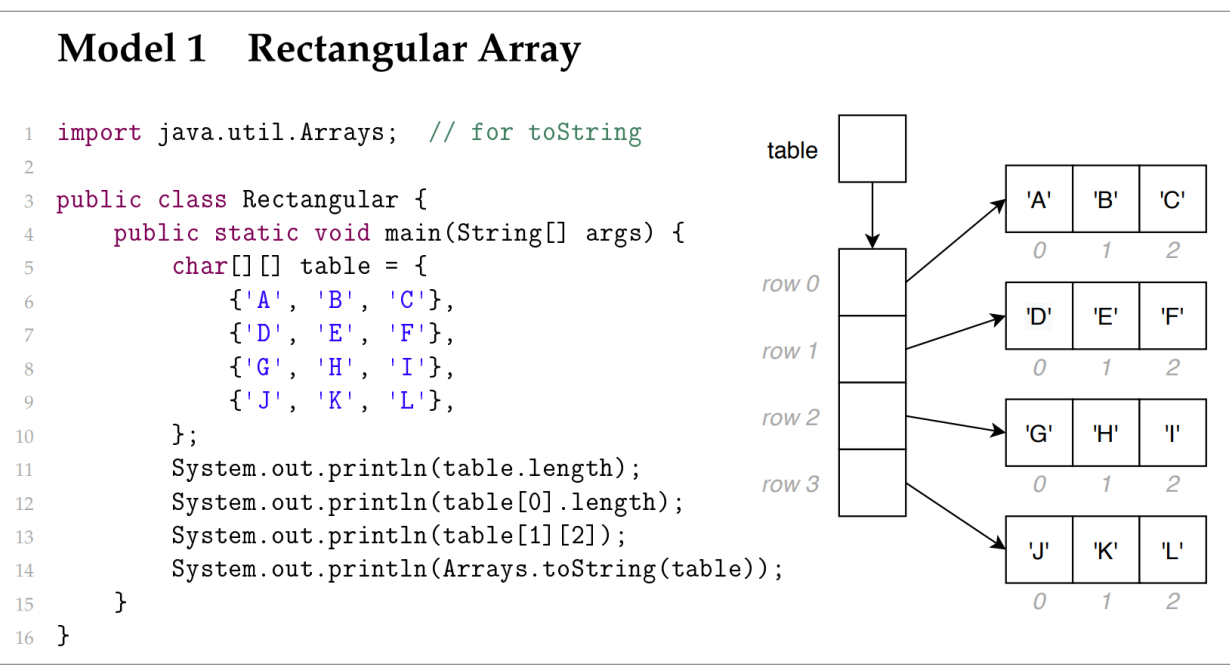


Critical Thinking

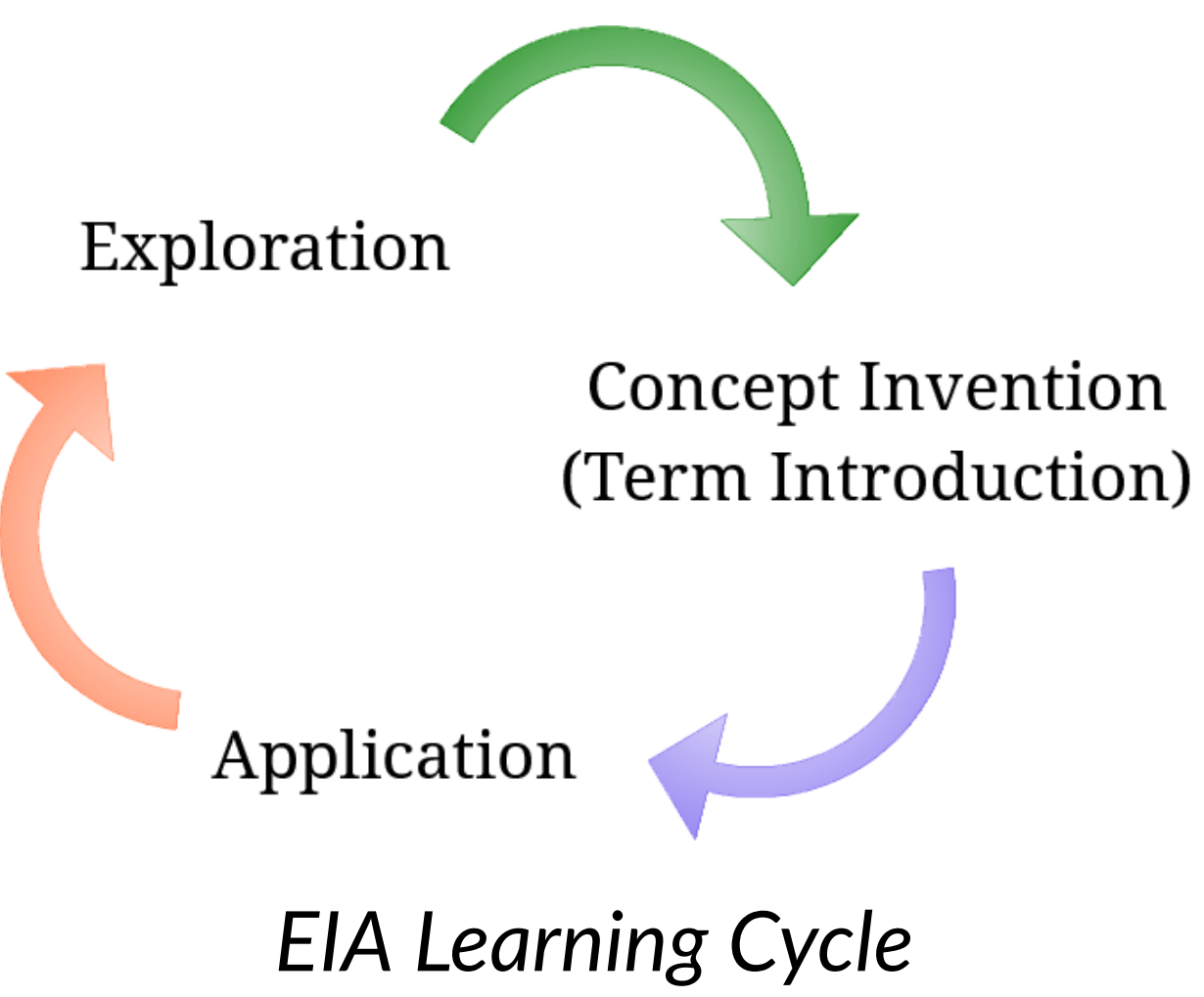


Problem Solving

GIL = Guided Inquiry Learning



Conceptual Models



Self-Managed Teams