Meta Activity: Team Roles

Decide who will be what role for today; we will rotate the roles each week. If you have only three people, one should have two roles. If you have five people, two may share the same role.

Manager:	Helen Hu	keeps track of time, all voices are heard
Presenter:	Clif Kussmaul	asks questions, gives the team's answers
Recorder:	Chris Mayfield	quality control and consensus building
Reflector:	Aman Yadav	team dynamics, suggest improvements

Questions (15 min) **Start time:**

1. What is the difference between **bold** and *italics* on the role cards?

The bold points describe what the responsibilities are. Examples of what that person would say are in italics.

2. Manager: invite each person to explain their role to the team. Recorder: take notes of the discussion by writing down key phrases next to the table above.

3. What responsibilities do two or more roles have in common?

Both the presenter and the recorder help the team reach consensus. The manager and reflector both monitor how the team is working.

4. For each role, give an example of how someone observing your team would know that a person is <u>not</u> doing their job well.

- Manager: The team is constantly getting behind.
- Presenter: The student doesn't know what to say.
- Recorder: Some team members aren't taking good notes.
- Reflector: The student never comments on team dynamics.

Meta Activity: Group vs Team

Throughout the course, you will need to examine and process information, ask and answer questions, construct your own understanding, and develop new problem-solving skills.

Questions (8 min) **Start time:**

1. What are some advantages to working in groups/teams?

You get to know other people and make new friends. Different people have different backgrounds and skills. The responsibility is shared.

2. What are some disadvantages to working in groups/teams?

Some group members may decide not to contribute. One or two students may be absent. People may not always get along with each other.

3. Based on the images above, what is the difference between a group and a team? Come up with a precise answer.

A group is students who just sit by each other and turn in the same assignment. A team actually works together toward a common goal, drawing on each other's strengths.

4. How can working as a team help you accomplish the tasks described above? Give at least two specific examples.

Working as a team makes it easier to examine and process information, because different people have different perspectives. We can also develop new problem-solving skills by observing how each other approaches the problems.

Meta Activity: Team Disruptions

Common disruptions to learning in teams include: talking about topics that are off-task, teammates answering questions on their own, entire teams working alone, limited or no communication between teammates, arguing or being disrespectful, rushing to complete the activity, not being an active teammate, not coming to a consensus about an answer, writing incomplete answers or explanations, ignoring ideas from one or more teammates.

Questions (10 min) **Start time:**

1. Pick four of the disruptions listed above. For each one, find something from the role cards that could help improve the team's success. Use a different role for each disruption.

a) Manager:

limited communication between teammates

b) Presenter:

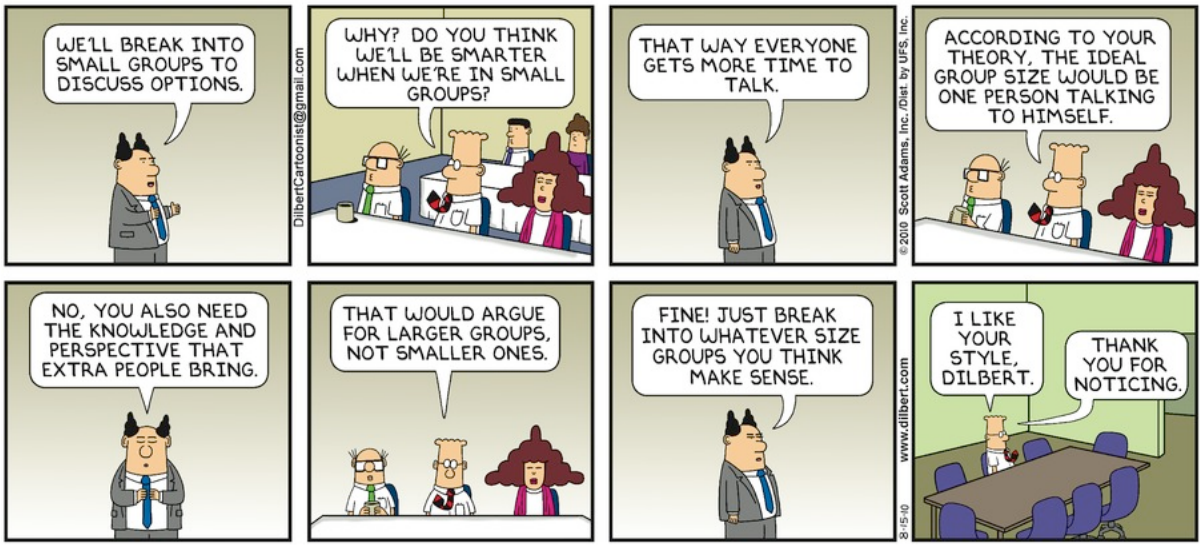
ignoring ideas from one or more teammates

c) Recorder:

writing incomplete answers or explanations

d) Reflector:

teammates answering questions on their own



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Meta Activity: What Employers Want

The following data is from the *Job Outlook 2019* survey by the National Association of Colleges and Employers (NACE). A total of 172 organizations responded to the survey.

Attributes Employers Seek on a Candidate's Resume

Attribute	% of respondents
Ability to work in a team	78.7%
Analytical/quantitative skills	71.9%
Communication skills (verbal)	67.4%
Communication skills (written)	82.0%
Detail-oriented	59.6%
Initiative	74.2%
Leadership	67.4%
Problem-solving skills	80.9%
Strong work ethic	70.8%
Technical skills	59.6%

Source: https://www.naceweb.org/talent-acquisition/candidate-selection/

Questions (10 min) Start time:

1. What are the top three attributes that employers look for on a resume?
   - #1: Communication skills (written)
   - #2: Problem-solving skills
   - #3: Ability to work in a team

2. Describe the process your team used to answer to the previous question.

   We searched the table for the highest three percentages and then made sure that we all had the same answers. (Note that searching/sorting involves comparison, which is the next model.)

3. How is communication (written and verbal) related to problem solving and teamwork?

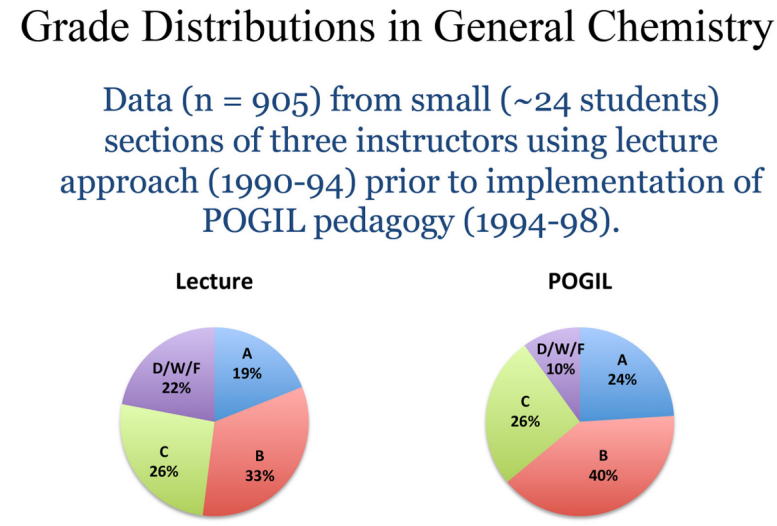
   Solving problems in teams involves talking to other people and trying different approaches. Writing solutions down is necessary to solidify the details and share them with others.

4. How does the team-based learning approach in this class help you develop these skills?

   POGIL activities provide an opportunity to develop these skills during class. Ideally, students will learn these skills both in the classroom and in other activities like clubs and internships.

Meta Activity: POGIL Research 1

Process-Oriented Guided Inquiry Learning (see pogil.org) is a student-centered, group-learning instructional strategy and philosophy developed through research on how students learn best. The following figure is from a peer-reviewed research article about POGIL:



Farrell, J.J., Moog, R.S., & Spencer, J.N. (1999). A Guided Inquiry Chemistry Course. *Journal of Chemical Education*, *76*, 570–574.

Questions (7.5 min) Start time:

1. Based on the figure above:

a) How many years were considered? 8

b) How many instructors were involved? 3

c) How many students were involved? 905

2. Which grade categories improved after the instructors switched to POGIL?

D/W/F decreased from 22% to 10%. This result is arguably the most important. B's increased from 33% to 40%, and A's increased from 19% to 24%. In other words, more students passed, and most students' grades increased.

3. What does the research suggest about POGIL's impact on student success?

"Students in courses employing a POGIL instructional strategy achieved a significantly higher success rate (defined as receiving an A, B, or C in the course, as compared to a D, F or withdrawal) than students who had been taught by the same instructors in previous years using a more traditional lecture-oriented approach." (Moog 2014)

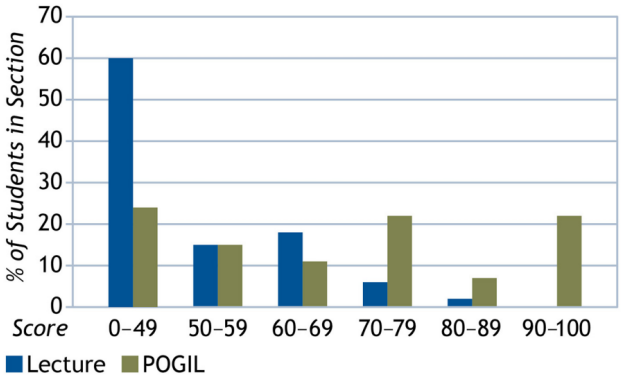
Meta Activity: POGIL Research 2

Many research studies have been conducted about POGIL. In the following example, students were given an unannounced quiz on the first day of class (based on the previous semester). About half of them had been taught in lecture sections, and half in POGIL sections.

Performance on Organic Chemistry 2
Unannounced First Day Pre-Quiz

All students passed Organic Chemistry 1 at this institution during the previous semester

All sections of Organic Chemistry 1 had more than 150 students.



Ruder, S.M., & Hunnicutt, S.S. (2008). POGIL in Chemistry Courses at a Large Urban University: A Case Study. In R.S. Moog, & J.N. Spencer (Eds.), *Process-Oriented Guided Inquiry Learning: ACS Symposium Series 994* (pp. 133–147). Washington, D.C.: American Chemical Society.

Questions (7.5 min)

Start time:

1. How large were the classes in the previous semester?

More than 150 students per section.

2. About what percentage of the …

a) Lecture students scored below 60? 75

b) Lecture students scored above 80? 2

c) POGIL students scored below 60? 38

d) POGIL students scored above 80? 30

3. What does the research suggest about students' retention of knowledge?

Students in courses that use POGIL are more likely to remember what they learn: "In contrast, fewer than a quarter of the students from the POGIL section scored below 50 percent on this quiz, and about 30 percent of the students scored above 80 percent, with over one-fifth of the POGIL students scoring above 90 percent." (Moog 2014)