What is POGIL? (Adapted by M. Brunson from an activity developed by Andrei Straumanis & Elizabeth Mancini)

Instructions: Pick 1 person to read aloud to the group: the Introduction, Learning Goals & Group Member Roles.

Introduction:

Process Oriented Guided Inquiry Learning (POGIL) is a method of instruction designed to increase student engagement and student learning. Students work in small groups on specifically designed activities, and the instructor serves as manager. Everyone in the class (including the instructor) has an important role.

Learning Goals:
1. To define the duties of the roles used in POGIL groups and explain the importance of these roles.
2. To identify the goals of the POGIL teaching approach.
3. To connect the goals of the POGIL teaching approach to knowledge and skills needed for success in a scientific career.

Group Member Roles

The names of several roles that may be used in POGIL group activities are listed below. Each student is assigned one role. When necessary (in the case of an absence), a second role may be assigned to some students.

Model 1: Group Member Roles for POGIL Activities

<table>
<thead>
<tr>
<th>SPOKESPERSON (2)</th>
<th>QUALITY CONTROL (2)</th>
<th>PROCESS ANALYST/REFLECTOR (1)</th>
<th>MANAGER (1)</th>
<th>FACILITATOR (2)</th>
</tr>
</thead>
</table>

1. Working as a group, discuss each of the following questions and agree on answer. Decide which role is most likely to be responsible . . . (some will be used more than once – the number in ( ) tells you how many times that role is used in question 1)

   a. for coordinating the entire activity, ensuring that all groups are on task and understanding the activity? Who will this person always be? _____________________________

   b. for assigning students to read each question in the activity out loud so everyone in the group stays together for the activity? _____________________________

   c. for leading the group, ensuring that assigned tasks are being accomplished and that all members of the group are participating in the activity? _____________________________

   d. for ensuring that accurate revisions happen after class discussions? _____________________________

   e. for reporting to the manager and the rest of the class when asked? _____________________________

   f. for seeking group input before asking the teacher questions? The only person who may ask the manager questions? _____________________________

   g. for giving the feedback to the group about how well they are doing during and after the activity – in answering the questions, working as a group, and developing important concepts. _____________________________

   h. for regularly checking that all group members have similar answers recorded on their handouts - would any one collected sample accurately demonstrate the group’s understanding? _____________________________

2. Ask the manager for the role cards. Read to yourself the description on the role card that you were given (For now you will take on that role). Each person should describe his/her role to the rest of the team (you might want to start by reading bold points). Go back and discuss your group's answers to question 1 above. Did you get the answers correct? If not, fix the answers by crossing out the incorrect answer and inserting the correct answer.
3. What objective(s) might be accomplished by specifying that only the spokesperson can ask questions of the manager/teacher? (In other words - why is this rule helpful?)

4. Describe at least one way that assigning roles might enhance the use of a POGIL activity?

5. Within your team write down who has each role for this activity. Roles will change for each POGIL, so each member of the group will have an opportunity to perform each role.

   Facilitator: __________________________
   Spokesperson: _________________________
   Process Analyst/Reflector: ______________
   Quality Control: _______________________

   When you have names written down, have the facilitator raise his/her hand.

6. Quality control team member – check in with your group about Questions #3 and 4. Does everyone have a similar answer? Your MAIN job during POGILs is to make sure that everyone has consistent answers.

   Course Preparation
   1. With your group discuss and write down 5-10 things you focus on to be successful in a science course. Circle or star your top 5.

   Employment Criteria
   Employers are usually looking for particular characteristics in their new employees.
   2. With your group discuss and write down 5-10 qualities/characteristics that you think an employer might look for in a prospective employee for a research position in a science lab. You may have some repeats from question 1, but think of at least 3 new characteristics. Star or circle your top 5. (The spokesperson should be prepared to report to the whole class when instructed to do so by the manager.)

   3. Call your teacher over when you are ready for a class discussion. Note any new qualities/characteristics that come from the class discussion.
4. As a group, consider both your Course Preparation list, and your total Employment Criteria list in questions 1 and 2/3 of this section (on the previous page). Mark each item on these lists as being more “content related” (C) or “skill related” (S). You can color code with highlighters/colored pencils, or you could write C or S next to each characteristic.

Job Skill Survey

**Figure 2: TOP PERSONAL QUALITIES/SKILLS EMPLOYERS SEEK**

| Leadership | Analytical/quantitative skills |
| Ability to work in a team | Technical/computer skills |
| Communication skills (verbal and written) | Motivation/initiative |
| Problem-solving skills | Flexibility/adaptability |
| Strong work ethic | Detail-oriented |
| Interpersonal skills (relates well to others) |

1 NACE (National Association of Colleges and Employers) Job Outlook 2015 survey.

1. Mark each item in Figure 2 with a C or S, as described in Employment Criteria 4.

2. Compare your total list from Employment Criteria 2 & 3 with the list in Figure 2. Indicate the items that appear on both lists by placing a checkmark (√) next to the items in Figure 2.

3. How many of the items checked in Figure 2 appear on your Course Preparation List? Mark them with an “x” in Figure 2.

4. One of the purposes of doing POGILs is to improve your process skills. Table 1 shows a list of process skill areas targeted by POGILs. Match the Process Skill Area on the left with its definition on the right. Your spokesperson should be prepared to report your answers to the whole class.

<table>
<thead>
<tr>
<th>Process Skill Area</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Information Processing</td>
<td>a. Identifying issues or problems and using prior knowledge to work through those issues and find solutions.</td>
</tr>
<tr>
<td>2. Critical &amp; Analytical Thinking</td>
<td>b. Cooperation among a set of people working on the same task towards a common goal; everyone positively contributes towards making progress on that goal</td>
</tr>
<tr>
<td>3. Problem Solving</td>
<td>c. Making observations – the brain gathers information from the environment or from data sources (including graphs and tables) and picks out what’s important</td>
</tr>
<tr>
<td>4. Oral &amp; Written Communication</td>
<td>d. Expressing information to people clearly and simply so that anyone could understand (could be verbal or on paper)</td>
</tr>
<tr>
<td>5. Teamwork</td>
<td>e. Evaluating your understanding and skill performance on your own and through feedback from others; using feedback to improve your performance in the future</td>
</tr>
<tr>
<td>6. Assessment &amp; Self-assessment</td>
<td>f. Making inferences based on many pieces of data; using reasoning and logic to: make conclusions, evaluate claims, summarize information, and recognize patterns</td>
</tr>
</tbody>
</table>

5. Which of POGIL’s targeted process skills correspond to the NACE Survey items in Figure 2? Circle them in Figure 2.
Content Self Assessment
During a new experience it is valuable to reflect back on the key points you have learned.

**Individually**, consider the activities that you just completed. For each of the sections listed below, summarize what you believe to be the most important points you should have learned during that section of the activity and write down any questions you have about them. Be concise and try to limit your answers to one or two sentences in your own words – don’t just recopy everything you learned. WRITE YOUR SENTENCES INDIVIDUALLY FIRST, THEN COLLABORATE!

- **Group Member Roles**

Course Preparation/Employment Criteria/Job Skill Survey

Process Analyst/Reflector’s Report Discussion
As a group, briefly discuss your individual responses to the Content Self Assessment. Your process analyst will summarize your conclusions and questions in the group’s electronic reflector’s report.
Out of Class Group Process Self-Assessment (Homework)

One of the process skill goals of POGIL activities is Assessment. The Process Analyst’s Report discussions focused on group assessment. This section provides you with an opportunity to assess your own contributions to your group’s success.

1. All four boxes in a given row of Table 2 focus on one type of group participation. In the first column of each row in the table, write a word or phrase that summarizes the focus of that row.

Model 4

Table 2: Self-Assessment Rubric

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>3 (Excellent)</th>
<th>2 (Good)</th>
<th>1 (Poor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routinely uses time well throughout the project to ensure things get done on time. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.</td>
<td>Usually uses time well throughout the project, but may have procrastinated on one thing. Group does not have to adjust deadlines or work responsibilities because of this person's procrastination.</td>
<td>Rarely gets things done by the deadlines AND group has to adjust deadlines or work responsibilities because of this person's inadequate time management.</td>
<td></td>
</tr>
<tr>
<td>Actively looks for and contributes solutions to problems.</td>
<td>Sometimes suggests or refines solutions offered by others. Always willing to try out solutions suggested by others.</td>
<td>Does not try to solve problems or help others solve problems. Lets others do the work and does not contribute.</td>
<td></td>
</tr>
<tr>
<td>Almost always listens to, shares with, and supports the efforts of others. Tries to keep people working well together.</td>
<td>Often listens to, shares with, and supports the efforts of others. Sometimes is not a good team member.</td>
<td>Rarely listens to, shares with, and supports the efforts of others. Often is not a good team player.</td>
<td></td>
</tr>
<tr>
<td>Consistently stays focused on the task and what needs to be done. Very self-directed.</td>
<td>Focuses on the task and what needs to be done most of the time. Other group members can usually count on this person, but sometimes other group members need to remind, nag, or prod to keep this person on-task.</td>
<td>Rarely focuses on the task and what needs to be done. Lets others do the work.</td>
<td></td>
</tr>
<tr>
<td>Work reflects this student's best efforts. Student is enthusiastic and positive.</td>
<td>Work reflects a good effort from this student. Student is moderately enthusiastic.</td>
<td>Work reflects very little effort on the part of this student. Student is negative or unenthusiastic.</td>
<td></td>
</tr>
</tbody>
</table>

2. For each row in the table, circle the statement that best describes YOU in terms of participation in your group during this activity. (This self-assessment can remain anonymous, and will not be collected.)

3. Calculate a “participation score.” Give yourself 1 point for an item in the Poor column, 2 points for an item in the Good column, etc., and add up all your points.