Writing Process Skill Goals for POGIL Activities

One of the principles that characterize POGIL as a teaching strategy and philosophy is the explicit emphasis on the development of process skills as an important component of the student learning experience. The process skills that we refer to here include both cognitive and affective processes that students use to acquire, interpret, and apply knowledge. At its outset, The POGIL Project identified seven process skills as those that would be the focus of development in a POGIL classroom:

- Teamwork
- Management
- Information Processing
- Critical Thinking
- Oral and Written Communication
- Problem Solving
- Assessment

However, many other process skills are important and valuable. For example, the ability to make order of magnitude estimates is a valid and worthwhile process skill even though it is not one of the seven listed above. (Some might consider this to be a useful skill to employ in problem solving, but making estimates is not the same as problem solving.) In an effective POGIL activity, the author has explicitly considered what process skill (or skills) is particularly well suited for development in that context, and has designed the activity to promote the development of the chosen process skill.

In any well-designed POGIL activity that follows the Learning Cycle structure and is implemented using the Basic POGIL Implementation Structure (see relevant documents for description), the first five listed process skills (Teamwork, Management, Information Processing, Critical Thinking, Communication) will be used and practiced by the students. Although this is the case, such an activity should be designed to specifically emphasize the development of one or two of these five (e.g. interpreting graphs is a specific example of Information Processing). Alternatively, an activity may be written with process goals other than those listed above. In both cases, an author should consciously choose which process skills to be the focus.

Being explicit about process skills is generally a less familiar task for faculty than identifying content goals. Also, in contrast to content goals for which the student is expected to be able to "do" something, the outcome for a process skill goal is *improvement* in the use of that skill. Below are examples of appropriate descriptions of process skill goals for an activity. Note that in some cases, the place in the activity where the process skill is developed is stated. This can be helpful, as it is an additional way for authors to focus on how the intended process skill goals are being achieved. It also helps others to better assess the extent to which an activity is likely to improve the designated process skill.

- Self-assessment and metacognition are emphasized (see Models 5a and 5b. in *A Guided Exploration of POGIL*)
- Problem solving (see Critical Thinking Question 10 in *ChemActivity 1*)
- Interpreting diagrams (a specific component of Information Processing). (*Circulatory System Activity*)
- Translating between representations (pictorial representation and verbal representation). (*EconActivity*)

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