
FACILITATION

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Be comfortable that you are a learning partner, not a giver of knowledge.

—A POGIL practitioner of 10 years

The role of the teacher in a POGIL learning environment is to facilitate students in their self-directed efforts to build knowledge and skills. The facilitator is not the focal point at the front of the room but moves among students acting as a learning coach. Successful facilitation requires careful planning and reflection on the part of the facilitator. Beginning with clear identification of targeted content and process outcomes, instructors create a formal or informal facilitation plan to improve the likelihood of achieving learning goals. As part of this plan, facilitators consider timing, physical space, classroom routines, team interactions, emotional support, ongoing formative assessment, and opening/closing strategies. Facilitators increase student buy-in to teamwork and decrease resistance by becoming familiar with the ideas discussed in this chapter.

Introduction to Facilitation

What is the facilitator doing in a POGIL classroom? Visitors to a POGIL classroom will rarely observe the facilitator standing at the front of the room; in fact, the facilitator may sometimes be hard to see at all. What do you notice when you enter? Students diligently engaged in argumentation and consensus building. Spokespersons reporting their teams' ideas to the whole class. Collaborative teamwork that leads students to develop both academic and interpersonal skills. Students leaning forward, gathered around a visual model to make sense of a new concept. Almost constant low-level, learning-focused chatter. Not your typical teacher-directed classroom (for a

short video example, see Masters, 2011a). Although POGIL classroom settings vary widely, they are all based on social constructivism, the idea that students learn best when they work actively together with peers to build their own understanding (Bodner, Klobuchar, & Geelan, 2001). It is not enough to simply hand out POGIL activities for students to complete on their own or in teams. The instructor's behavior as a facilitator of learning is critical (Daubenmire et al., 2015). The facilitator's role is to create a learning environment in which students collaborate to master both content and process skills (for a short video example, see Masters, 2011c). Instead of using lectures to present fully formed ideas, POGIL facilitators act as learning coaches who provide students with the appropriate tasks and feedback they need to learn and improve. This is accomplished through carefully planning course structure and activities and through intentional behaviors before, during, and after class.

Discipline-based science, technology, engineering, and mathematics (STEM) education research has clearly demonstrated that active learning improves student achievement in science, engineering, and mathematics (Barthlow & Watson, 2014; Freeman et al., 2014; Singer, Nielsen, & Scheingruber, 2012). Furthermore, growing evidence suggests that underrepresented minorities and first-generation college students disproportionately benefit from active learning (Eddy & Hogan, 2014; Haak, HilleRisLambers, Pitre, & Freeman, 2011). More recent studies have examined the aspects of instruction that influence the quality of students' learning experiences. The choices instructors make have a major influence on student learning outcomes (Eddy & Hogan, 2014) and self-reported experiences in the classroom (Turpen & Finkelstein, 2010). As part of a process to produce an instrument for assessing active learning practices, Eddy, Converse, and Wenderoth (2015) conducted a comprehensive literature review to identify evidence-based best practices that improve achievement across four domains (practice, logic development, accountability, and apprehension reduction). Active learning comprises many strategies, including students discussing concept questions in small groups and then responding with clickers (Vickrey, Rosploch, Rahmanian, Pilarz, & Stains, 2015), team-based active learning used in POGIL, problem-based learning, and peer-led team learning (Allchin, 2013; Eberlein et al., 2008). Regardless of the specific classroom environment, all high-quality facilitators engage in a few key practices, described in detail next.

In an active learning context, instructors must make a paradigm shift from lecturer to facilitator. In lecture-based classrooms, instructors are the focal point of instruction and are viewed as the source from which fully formed ideas flow. In contrast, the role of the instructor in a student-centered classroom is to shape the structures, experiences, relationships, and classroom