Research Themes that Support the POGIL Mission
PNM June 2021, Research Working Group

1. **FEEDBACK** (growth projections of process skills): In what ways does providing faculty with training and feedback on the facilitation and assessment of process skills impact student perception of their growth? Does time spent on developing instructors' ability to teach skills result in any changes in their teaching? In what ways does providing students with feedback on how to develop key process skills improve students' persistence in the class?
   a. OPTIC usage:
      i. Use OPTIC to provide faculty a sense of time on task in their classrooms, over the course of a semester (4 times?) to characterize a class.
      ii. Use OPTIC to provide faculty a sense of time on task in their classrooms, provide feedback and follow-up coaching (SII), perhaps every two weeks? (Also, consider timing - early, middle, late; before or after exam or consider specific course content.)
      iii. How does facilitator experience affect OPTIC observations?
      iv. Do OPTIC results align with student perceptions of what makes the classroom room learning environment effective?
   b. ELIPSS Rubric usage:
      i. Focus on 2-3 process skills, use ELIPSS rubrics to measure changes in these skills over the course of a semester. Use the same rubric at least 2 times during the semester. Critical point in such study design would be <u>sharing the feedback with faculty</u> after collecting filled ELIPSS rubrics from teams. Faculty makes changes in their facilitation of POGIL and/or class delivery methods to foster students' progress in the development of process skills. After, skill should be measured again.
      ii. Feature of this variation of study design is that faculty is not directly receiving feedback or instructions from the research team and is not requested to specifically make changes to address process skill. That falls onto <u>students/teams themselves</u> and is of interest whether it could be an effective strategy to foster process skill development. Perhaps for this study it makes more sense to concentrate on just 1 (or 2 as a maximum) process skill development, to be able to measure progress towards process skill mastery. It is estimated that the same rubric will be applied about 7 times throughout the semester. Pre- and post- surveys could be used; as well as SII instruments, or other instruments.

2. **IMPLEMENTATION** (creating a picture of what is going on in the classroom): What are key characteristics of effective implementation? Rubrics can measure gains in student process skills that are listed as outcomes, but existing tools don't capture how process skills are emphasized, incorporated into materials,facilitated or assessed. Can a

separate tool be developed to assess process skill implementation? In what ways can the use of OPTIC support effective implementation of POGIL pedagogy? (How do we define effective implementation?)

    a. OPTIC usage:

        i. First-time implementers. Engage in case study of new POGIL implementers right after introductory workshops when they start to implement for the first time. What are they or are they not able to enact regarding POGIL model. Identify what facilitation preparation they most need. Create stories that will answer the question of "what will it be like" as a new POGIL instructor.

        ii. Case study of a set of experienced POGIL practitioners (NCAPP graduates perhaps) to identify what features of practice they all commonly enact -- what are the critical features for managing a POGIL classroom

        iii. Perform a study analogous to COPUS-based study of faculty: gather contributed videos from people who say they are implementing POGIL, then describe using OPTIC. This informs the POGIL community of the range of implementation. High school as well as college settings would be of interest.

        iv. Quality control assessment of OPTIC -- what's the tool missing (e.g. process skills as supported by instructor as mentioned above; e.g. efficacy of roles).

    b. ELIPSS Rubric usage:

    Clearly identify which process skills will be emphasized in the course/study

        i. Use ELIPSS rubrics throughout the semester to monitor and assess targeted process skills for the course and track the degree to which they improve

        ii. Incorporate both student self-assessment of skills and instructor/observer assessment of student skills. Compare alignment between self-assessment and observer assessment

3. **INCLUSIVITY** (creating opportunities for everyone who is present in the classroom) Can OPTIC and ELIPSS rubrics be used to help gauge the extent to which a classroom is an inclusive classroom? What other tools might be more effective in measuring inclusivity in a POGIL classroom. How inclusive is a POGIL classroom vs other active learning environments?

    a. OPTIC usage:

        i. **Classroom Instruction/Facilitation:** Use the OPTIC classroom observation tool to characterize classroom inclusivity based on the type of classroom instruction (e.g., POGIL, PBL, etc.). The OPTIC classroom observation tool assesses nine types of classroom interactions.

ii. **Classroom Activity:** Use the Broadening Representation and Accessibility in POGIL Materials defining features matrix and UDL principles chart to characterize the inclusivity of the classroom activities.

iii. **Sense of Belonging:** Use a "Sense of Belonging" survey, OPTIC tool, and student learning outcomes to determine the effect of classroom interactions on student's sense of belonging and student learning outcomes.

b. ELIPSS Rubric usage: In all cases, use Feedback Elipss rubrics to support building successful interaction skills in a classroom throughout the semester (using a variety of implementation styles). Use the Sense of Belonging survey or OTHER TOOL (?) to measure changes in classroom atmosphere as a result of these efforts

i. Use IPC to support communication skills and optimize good communication practices.

ii. Use Teamwork to optimize good team practices, maybe even expand to include more UNITY categories (community building? Engaging difference?)

iii. Oral communication/Presentation?

iv. Use management rubricRese to allow each student to be a leader, and focus on different leadership styles, and the aspects of working effectively under different types of leadership?

4. **COOPERATIVE LEARNING** (engaging in the active learning environment): Measure the efficacy of teamwork and collaborative learning gains, using OPTIC and the teamwork and interpersonal communication rubrics for POGIL classroom. What part of the OPTIC tool aligns with the teamwork rubric? Use rubrics to assess quality of student interaction and then outcomes in supporting an inclusive and supporting environment. How might roles influence a cooperative learning classroom (use OPTIC and ELIPSS to assess classrooms that use roles in different ways)?

a. OPTIC usage:

i. Apply OPTIC and the ELIPSS teamwork rubric in the same setting and at the same time; which OPTIC codes align with better teamwork? Will need to do this over time and in a variety of settings.

ii. Apply OPTIC in different classroom settings, some settings where POGIL is implemented and some other settings. Before using the tool, ask faculty to predict how engaged their students are during class or to predict the extent/quality of teamwork. Use OPTIC results for coaching, especially for instructors who don't use POGIL but want quality classroom discussion and collaboration.

iii. Same as ii, but with a focus on inclusion.

iv. Something with using OPTIC for discussion with administrators. Develop a database of videos that could be used for training faculty and students in improving teamwork, for research, for marketing and to reach donors, and for demonstrations of effective teamwork and inclusive teaching for administrators.

B. ELIPSS Rubric usage:

i. Apply ELIPSS teamwork and interpersonal communication rubrics during class team activities to assess level of collaboration and measure improvement in skills over the course of a semester.

ii. Look at turn taking as students speak during group work. This could be used as a measure of inclusion within the team. Assess using the teamwork rubric as a comparison.

iii. Use ELIPSS rubrics to assess different active learning environments to compare collaborative learning.

Survey Results from PNM Participants

Which research theme do you see as the top priority for The POGIL Project?
29 responses

- 🔵 FEEDBACK (growth projections of process skills)
- 🔴 IMPLEMENTATION (creating a picture of what is going on in the classroom)
- 🟠 INCLUSIVITY (creating opportunities for everyone who is present in the classroom)
- 🟢 COOPERATIVE LEARNING (engaging in the active learning environment)