



## 5-in-5 Presentations

22<sup>nd</sup> Annual POGIL National Meeting

Sunday, June 23, 2024

2:30 PM

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1. **Social Network Analysis & POGIL Facilitation: Visualizing Student Discourse in a POGIL Physical Chemistry Classroom**

**Presenter:** Sally Hunnicutt – *Virginia Commonwealth University (VA)*

**Summary:** Graphical analysis of student discourse in a POGIL-Physical Chemistry Classroom was used to visualize student interactions by diagramming the oral turn-taking behavior of student discussions in class. The resulting sociograms were characterized by their centralization and reciprocity scores as well as students' cognitive engagement behaviors (Chi, M. T. H. *Top. Cogn. Sci.*, 2009, 1, 73-105). The instructor facilitation moves that lead to more effective interactions and higher engagement will be described.

This research was published in 2021 (Liyanage, D., Lo, S. M., Hunnicutt, S. S. *Chem. Educ. Res. Pract.*, 2021, 22, 93-104).

2. **Collective Intelligence as a Factor in the Performance of Human Groups**

**Presenter:** Rick Moog - *The POGIL Project*

**Summary:** Psychologists have repeatedly shown that a single statistical factor—often called “general intelligence”—emerges from the correlations among people’s performance on a wide variety of cognitive tasks. In several studies, researchers found converging evidence of a general “collective intelligence” factor that explains a group’s performance on a wide variety of tasks. The characteristics that most significantly contribute to “collective intelligence” will be discussed.

The results from three related papers formed the basis of this presentation:

Woolley A. W. *et al.* (2010) *Science* 330, 686-688 [10.1126/science.1193147]

Engel D. *et al.* (2014) *PLoS ONE* 9(12):e155212.  
[10.1371/journal.pone.0115212]

Riedl C. *et al.* (2021) *Proc. Natl. Acad. Sci.* 118(21):e2005737118  
[10.1073/pnas.2005737118]

3. **Exploring Relationships that College Instructors Seek to Build with Intention in Chemistry Classrooms**

**Presenter:** Rick Moog - *The POGIL Project*

**Summary:** Teaching is a complex activity that demands paying attention to diverse components and relationships that affect the learning process and acting with intentionality to build and nurture those connections. This qualitative research study describes an intentional–relational framework used to explore

differences in the relationships that four general chemistry instructors sought and acted to build with intention in their classes. The instructors all showed a strong interest in helping students succeed but they differed in the extent to which they attended and responded to contextual issues, intentionally seeking to make content relevant to students, helping them build connections between their interests and the discipline, and adapting resources to create more inclusive learning environments. These differences seem to affect student performance in common exams.

This presentation is based on:

Moreira, P. and Talenquer, V. (2024) *Chem. Educ. Res. Pract.* 25, 225-241  
[10.1039/D3RP00198A]