
POGIL BEYOND STEM

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It works widely. I have not encountered a population of learners (children → faculty) where the principles could not be used effectively.

—A POGIL practitioner

This chapter focuses on POGIL's extension and application in non-science, technology, engineering, and mathematics (STEM) disciplines, building on the foundations of POGIL previously discussed in this book. The theory, process, guided inquiry, and evidence of student success are applicable to non-STEM disciplines; however, each discipline may require a few adjustments in content and delivery. Many non-STEM disciplines rely heavily on process skills, which are paramount to the POGIL process. Details on applications to the fields of second language (L2) learning and information literacy serve as case studies, with evidence of learning enhancement and similar foundational learning theories.

Literature Review

POGIL has been used in a wide variety of non-STEM disciplines such as marketing (Hale & Mullen, 2009), German language (Johnson, Cagle, & Jackson, 2011), financial literacy (Maurer, 2014), information literacy (Loo, 2013; Mitchell & Hiatt, 2010; Moore, Black, Glackin, Ruppel, & Watson, 2015), aviation (Vacek, 2011), programming (Hu & Shepherd, 2013), entrepreneurship (Kussmaul, 2011), urban education (Tobin, Ali-Khan, & Shady, 2014), and family science (Maurer, 2012). Four studies in this group stand out because they were conducted in the fields of L2 learning (Johnson et al., 2011) and information literacy (Loo, 2013; Mitchell & Hiatt, 2010; Moore et al., 2015), the topics of this chapter's case studies. Johnson and colleagues (2011) recommends using POGIL lessons to encourage learners to develop

their own explanations for complicated grammar rules in L2 acquisition. The group inquiry work in Johnson's German class developed critical thinking skills by working "through language-related frustrations and insecurities," gaining confidence in learning "on their own" (Johnson et al., 2011, p. 31), self-correcting mistakes, and working well as part of a team.

Mitchell and Hiatt (2010) presented a case study using the POGIL method in a credit-bearing information literacy course that consisted of three lesson plans: research topic identification and exploration, topic outline and resource identification, and resource evaluation. After the information literacy POGIL unit concluded, students indicated that the "active nature of learning these concepts and skills was preferable to other methods" (Mitchell & Hiatt, 2010, p. 541).

Loo (2013) discussed improving learning of information literacy skills in one session of a chemistry class with guided and team-based activities that incorporated process worksheets and POGIL elements. "Students gained practical hands-on experience in a guided fashion," with the librarian providing personalized learning support and observing student progress during class (Loo, 2013, pp. 258–259).

Moore and colleagues (2015), in their descriptive study of information literacy instruction based on POGIL, concluded, "The information literacy instruction, linking learning activities directly to student assignments, was advantageous to skill mastery, retention, and transference" (p. 162). In addition, incorporating POGIL increased student engagement and provided students experience in critical thinking, problem-solving, and teamwork.

While it is interesting to learn about various ways POGIL has been incorporated into non-STEM disciplines, it is more valuable to discuss *why* going beyond STEM should be considered.

Why Go Beyond STEM With POGIL?

Employing the POGIL method in any discipline provides the opportunity to impart transfer skills; teach process skills and social learning; improve mastery of content, skills, and depth of learning; increase course exam scores and grades and standardized test scores; increase student perceptions of the value of learning in teams; and lower course attrition rates. The fact that process skills help students transfer acquired procedural skills to new conceptual and social situations is the most valid reason to employ POGIL across disciplines. Active learning approaches target the universality of *how* things are learned (Bransford, Brown, & Cocking, 2000) with the intent of establishing the *process* for further learning. The struggle to impart transfer skills, or the ability to apply complex concepts to new situations, is continuous in every teaching field (Wiggins & McTighe, 2005). "Transfer is affected