



Chemical Education

Implementing Process-Oriented Guided Inquiry Learning in an Undergraduate Physical Chemistry Class: A Survey of Student Perception and Attitudes

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ABSTRACT

Process-Oriented Guided Inquiry Learning (POGIL) is a student-centered, pedagogic strategy that has been used effectively in science classrooms in several colleges and universities, especially in USA. This approach is built on the ground breaking research work in the areas of cognitive development, cooperative learning, and instructional design by several researchers. Process-oriented, guided-inquiry learning (POGIL) is an active learning method based on learning cycle paradigm which is consistent with research on how students learn as described by Novak's human constructivism theory. This paper presents a case study of the authors' experience using the POGIL method in a Physical Chemistry course involving spectroscopy. The POGIL activity, initially, familiarized students with several terms and laws governing spectroscopy and hence set a ground for them to construct knowledge about energies involved in several allowed transitions and decipher the structure of spectra obtained as a consequence with the help of critical thinking questions and finally helped them to extrapolate the knowledge constructed to several applications of spectroscopy. The students were actively engaged in classroom and interacted with the instructor without inhibitions to tackle critical thinking questions. In this paper we describe our approach to using POGIL and discuss student perceptions regarding the same, which was obtained from the students in the form of a survey based on a Likert type scale. The conclusions of this research throws open a plethora of avenues for future implementation of POGIL in Chemistry in the Indian context.

Keywords: Chemical Education Research, Inquiry based Learning, Guided Inquiry Learning, Active Learning, Student-centered Learning, POGIL.
