

Target Inquiry: Transforming In-service Teacher Professional Development and Instruction in High School Chemistry

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Question(s) for Discussion: How do we measure the impact of professional development on teacher learning and changes in classroom practice and student performance?

Session Description: Over the past 50 years, attempts at high school chemistry reform via teacher professional development (PD) have yielded virtually no change to teacher practice or student outcomes. Predominant lecture instruction and sporadic verification labs continue to be replicated across the nation despite national and state calls for inquiry approaches. The more states and national organizations demand teachers to use inquiry, the more ineffective PD offerings emerge.

In this session, we will present the results of a four-year longitudinal, mixed-methods study of a markedly different model known as Target Inquiry (TI). Findings from the study show that TI affects teacher beliefs, transforms teacher practice, and increases student achievement. Moreover, TI's success stems from a commitment from bench chemists and chemistry educators, implying that teacher PD responsibilities must include the chemistry education community.

The objectives of this session are to:

1. share the results of the study of TI with the DR-K12 community;
2. generate discussion about shifting teacher PD toward theory and data-driven models and away from brief “make-and-take” experiences; and
3. solicit ideas regarding the logistics of scale-up and dissemination of PD models and how the DR-K12 community can have a coordinated impact on a national level.

The session begins as a formal presentation (i.e., research talk). The PIs will describe the TI model for PD, the research questions for its study, the data collection and analysis methods, and results for the first four (of five) years of the project. We will then pose discussion questions to the participants to discuss at their table rounds. The questions, below, are designed to consider our project as one example in a broader context and consider how the issues we raised connect to other projects.

1. How can we shift teacher PD toward long-term theory and data-driven models and away from brief “make-and-take” experiences? What are the political and institutional barriers to transforming PD?
2. What's next for us and many projects represented here? In other words, what are logistical concerns for the scale-up and dissemination of new PD models? How can the DR-K12 community have a coordinated impact on a national level?

Although this presentation focuses at first on just our project, there are many features we will share with colleagues directing projects in the DR-K12 portfolio. TI is a new model for teacher PD. We are striving to understand how a new PD model affects teacher practice and to detect and measure the student outcomes of our project. We are at a crossroads and hope to scale up and study a broader implementation in new contexts.

Target Inquiry Web site: www.gvsu.edu/targetinquiry

Related Resource:

Kennedy, L. M., Yeziarski, E. J., & Herrington, D. G. (2008). Whose Science Is It Anyway? Models of Science According to Chemistry Students, Faculty, and Teachers. *Science Educator*, 17(1). Retrieved from <http://www.nsela.org/publications/scienceeducator/17/article1.pdf>