A Successful Professional Development Model for Preparing Teachers to Use Reform-Based Curriculum Effectively

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Question(s) for Discussion: How do you enact professional development to support teacher learning and have positive impacts on teacher knowledge, attitudes, and instructional practices?

Session Description: In this session, we will share our experiences designing and leading professional development (PD) for teachers of the Investigating and Questioning our World through Science and Technology (IQWST) curriculum. We will facilitate dialogue among session participants about challenges, dilemmas, and successes, and then will share a model we have developed—across several years—that achieves our most salient learning goals as science and literacy educators and middle school curriculum developers. The session will inform participants' future design of successful PD. A major challenge we face is preparing teachers, in five days of summer PD, to teach a new curriculum. In addition to having them develop necessary content knowledge, we want teachers to develop (1) a sense of the curriculum's intra- and inter-unit coherence, and the importance of building conceptual understanding across time, and (2) an understanding of the curriculum's underlying philosophy and design features. For example, to enact IQWST effectively, teachers must learn the purpose and use of a driving question, the importance of students experiencing and investigating phenomena, the uses of embedded formative assessments, the importance of integrated literacy practices, and the development of scientific practices across time.

Our major goal is to build foundational understanding of key pedagogical principles, so those ideas will be generative as teachers teach all four units throughout the school year. However, teachers' goals for PD sometimes challenge what we hope to accomplish. For example, as curriculum developers and teacher educators, we focus on using embedded assessments formatively; teachers look for opportunities to assign grades. As teacher educators, we stress the importance of sense-making that builds over time; many teachers want students to have right answers. As science educators, we want students to experience phenomena; some teachers prefer teacher-led demonstrations that are far easier. We also know that teachers must carry out activities in order to gain confidence in their ability to enact them in the classroom, yet as we engage in activities, we realize that doing so can too easily overshadow the importance of learning goals, of sense-making, or of seeing how activities build on previous lessons and purposefully leave questions unanswered to motivate those that follow.

In this session, we will highlight these challenges, enacting elements of our PD model to share what we have learned about shaping teachers' attitudes and enactment in ways congruent with inquiry philosophy, design, and pedagogy. The approach includes "model teaching," with participants expressing a level of understanding that middle school students might have, then debriefing the model teaching, so participants actively learn curriculum philosophy, design principles, and features in context and are shown rather than told, "These are the important features of an inquiry curriculum." IQWST teachers consistently report that this model is valuable in preparing them to teach reform-based materials, and science coordinators indicate that the PD improves the teaching practices of those they supervise. Session attendees will experience the model, and together we will generate both guidelines and questions to shape future work as we continually look to improve the teaching and learning of science.