

Tipping Points: A System of Tools and Routines to Support Expert-like Practice in Early Career Teachers *Jessica Thompson and Mark Windschitl, University of Washington*

Question(s) for Discussion: What are our implicit or explicit theories about teacher learning, and how do they affect teacher preparation and support?

Session Description: In this session, we will share research findings on early-career-teacher learning. These findings resulted in a system of tools and socio-professional routines designed to advance the teaching practices of novices during their pre-service and induction years.

Apprenticing novice teachers into the ambitious practices outlined in our national reform documents is complicated by the pervasive routines of low-level questioning “hard-wired” into classrooms, the lack of clear models of sophisticated practice, and inexperienced educators’ limited understanding of students’ capacities to engage in challenging work. Even when novice teachers are exposed to powerful conceptual frameworks to help them think about organizing instruction and analyzing classroom events, they either do not know how to enact these ideas in the classroom, or they reject these frames and rely on conservative teacher-centered instruction.

To address these challenges and explore conditions under which novice science teachers can learn and apply forms of ambitious pedagogy, we conducted a longitudinal study with multiple layers of analyses. The study was a three-year investigation of a cohort of secondary science teachers in which we looked at trajectories of their classroom practice, specifically their ability to support students’ attempts at model-based inquiry. These individuals were supported during induction by tools that allowed them to regularly learn from their own practice.

The induction process focused on collaborative inquiry into student thinking—specifically the analysis of artifacts of student work, including students from all achievement strata in the classroom. For this induction, we developed prototypes of tools and socio-professional routines aimed at developing one high-leverage practice related to model-based inquiry: the ability to scaffold students’ evidence-based explanations of science phenomena. Subsequent data from the classroom observations show that productive participation in this collegial practice was linked with advances in the ability to support students’ evidence-based explanations, but that particular modes of participation were highly correlated with greater advancements in practice. We share research findings that inform both theory on teacher learning and the development of a system of tools to support ambitious practice by novices.

We will also share new pilot information about a resulting suite of tools (Discourse Tools, Big Idea Tool, Learning Progression for teachers around Model-based Inquiry, etc.). As part of this set, we developed the APEXst model of induction, which includes tools and routines tailored specifically to the needs of beginners, to help them analyze both student work and video samples of classroom discourse. This model is distinguished from others in which teachers are brought together to examine student work and/or video in the following ways:

1. The supporting tools and protocols are developed directly from research on how novice teachers learn to take up ambitious practices.
2. The model focuses on the development of a single high-leverage practice (in this case, pressing for evidence-based explanations).
3. The model cultivates longitudinal learning—both student and teacher learning over the course of a year.
4. Participants are accountable for attending to the needs of students at all levels of the achievement spectrum.