

ISEE Outcomes in Professional Development

National Challenges in Professional Development*

“Despite its prevalence, the workshop model’s track record for changing teachers’ practice is abysmal. **Short one-shot workshops often don’t change teacher practice** and have no effect on student achievement.”

(Yoon et al 2007; Bush 1984)

“Studies show that effective professional development programs require anywhere from **50-80 hours** of instruction, practice, and coaching before teachers arrive at mastery.”

(French, 1997; Banilower, 2002; Yoon et al., 2007)

“When professional development merely describes a skill to teachers, **only 10% can transfer it to their practice.**”

(Bush 1984)

“Numerous studies have shown **coaching to be successful at changing teacher practice** and improving student learning. Coaching includes teachers working with a master educator before, during and after a lesson.”

(Showers, 1984; Slinger, 2004; Knight, 2007; Batt 2009; Stephens et al., 2007; Knight and Cornett, 2009)

“**Modeling by the coaches has been shown to be very effective** at helping teachers grasp a new teaching approach before they attempt implementation.”

(Roy, 2005); Goldberg, 2002; Rice, 2001; Black, 1998; Licklider, 1997)

The Institute for Scientist & Engineer Educator's PDP Model and Outcomes

The PDP includes ongoing cycles of instruction followed by implementation and reflection, with coaching throughout.

(Hunter, et. al. 2010)

PDP participants spend an average of **100 hours** that includes instruction, practice, and coaching.

PDP participants are able to **demonstrate their understanding of inclusive teaching strategies.**

(Metevier, et. al. 2010)

95% of PDP participants implement an inquiry lesson; **70%** with high fidelity.

(<http://isee.ucsc.edu/rd-projects/inquiry-framework.html>)

PDP instructors coach participants before, during, and after implementation of new teaching practices.

(Hunter et. al., 2010)

PDP instructors model the implementation of a well-designed inquiry lesson, as well as many other strategies, including:

- Leading a small group discussion
- Think-pair-share
- Jigsaw
- Flipped instruction
- Teaching moves

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“Professional development that focuses on teachers analyzing the specific skills and concepts they’ll teach in their discipline is not only well-received by teachers, but has also been shown to improve both teacher practice and student learning.”

(Blank de la Alas and Smith, 2007; Carpenter et al., 1989; Cohen and Hill, 2001; Lieberman and Wood, 2001; Merek and Methven, 1991; Saxe, Gearhart, and Nasir, 2001; Wenglinsky, 2000; McGill-Franzen et al. 1999; Darling-Hammond et al. 2009)

“Professional learning communities can be a vehicle for teacher changes and school reform.”

(Louis & Marks, 1998)

“The vast majority of teachers do not teach critical thinking, and observations indicate that students rarely engage in meaning making and reasoning, investigation and problem-based approaches, questioning strategies and student generation of ideas and questions.”

(Kane & Stainger, 2012)

“The area of greatest struggle (for teachers) is not in *learning* a new skill, but in *implementing* it.”

The Institute for Scientist & Engineer Educator's PDP Model and Outcomes

PDP participants work on small teams to design and teach an activity, including carefully defining an important concept and skill to be taught within their disciplinary area. **PDP participants have demonstrated learning outcomes** from the learners they taught, including:

- **Scientific concepts**
(Montgomery, et. al., 2010; Putnam, et. al. 2010)
- **Scientific reasoning skills**
(Ball, 2009; Putnam et. al. 2010; Metevier, et. al. 2010)
- **Attitudinal changes**
(McConnell, et. al., 2010)

The PDP is embedded in a professional learning community that, through a decade of work focused on inquiry teaching and learning, brought about organizational change (or “reform”) in a community of scientists.

(Ball, 2009; Ball and Hunter, 2010)

All PDP participants identify a reasoning skill (e.g. hypothesizing, explaining findings, or defining problem requirements), what it looks like when a learner masters it, and what it looks like when a student is struggling with it. **PDP participants have been successful in teaching reasoning.**

(Ball, 2009; Ball and Hunter 2010)

The PDP community has identified challenges to implementing inquiry, and implement strategies for overcoming these challenges.

(Ball, 2009; Ball and Hunter, 2010; Ball and Hunter, 2013)

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