

PROJECT SUMMARY

Overview:

This is a Level II Design and Development project within the Teaching Strand of the DRK12 program to develop and examine an innovative professional development (PD) program for Algebra teachers. This project, the Practice-Driven PD Study, extends the research team's prior DRK12-funded work in the Flipped Math Study to build on what was learned to 1) develop and field test PD materials to support algebra teachers at scale; and 2) research the efficacy of this PD model in terms of student learning outcomes and teacher instructional practices. This project focuses on teachers' current instructional practices to support teachers in adopting small changes to those practices. The Practice-Driven PD Study seeks to provide teachers with instructional actions that are tailored to their existing practice, can be readily adopted, and are easily accessible. The team will take teachers' current instructional practice as the focal point and work to incrementally guide those practices toward practices that were found to be positively related with student learning outcomes in the Flipped Math Study project. Funding will allow the team to carefully examine and articulate the PD's outcomes in relation to student learning outcomes and teachers' sustained instructional practices.

Intellectual Merit:

PD constitutes a direct attempt to improve the quality of instruction for teachers already in the classroom. Traditional PD is typically costly in terms of time and money, and efforts tend to be delivered as a one-size-fits-all approach. Furthermore, for teachers who adopt novel techniques such as flipped instruction, there may be few resources to support their efforts. This project seeks to develop a personalized PD approach that centers on and builds from teachers' practices and individual strengths rather than trying to replace current practices. In the prior study, the team generated instructional profiles of 30 algebra teachers and found that they varied considerably (as one might expect) in their instructional strengths and weaknesses, yet were consistent in some core aspects (e.g., proportion of class devoted to individual work time). Thus, a sensible approach to continuing to develop the teachers' practices is to use their strengths in order to address their weaknesses. This project will contribute knowledge about the effectiveness of an incremental, practice-driven approach to PD and instructional change.

Broader Impacts:

This project seeks to understand the ways in which a practice-driven PD model can support teachers in adopting incremental improvements to practice that will support student learning. The aim is to develop a scalable PD model that can benefit teachers' algebra instruction. In particular, the identification of actions that are easily taken up by teachers, which the team calls high-uptake actions, will support scalable teacher learning experiences. This is vitally important as algebra is a critical course in students' mathematics education. The Practice-Driven PD Study's broader impacts are based upon the (1) research program that will inform researchers and professional developers about how teachers' learning in this PD model can change their practice and enhance students' learning of algebra; (2) the development of a scalable model of PD that allows for flexibility in teachers' learning pathways and participation; and (2) a robust dissemination plan that will share our findings broadly in a number of open access outlets and formats.