

Focusing on Mathematical Knowledge: The Impact of Content-Intensive Teacher Professional Development

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Purpose: This study evaluated the impact of a 93-hour, content-intensive professional development on 221 fourth grade teachers and their students in 84 schools as well as the fidelity of implementation.

Research Questions:

- Was the study professional development implemented with fidelity? What were the features of the professional development as implemented? To what extent did teachers participate in the professional development?
- What was the impact on teachers' content knowledge, teachers' classroom practices, and student achievement, of offering content-focused professional development relative to business-as-usual professional development?

Research Methods: The treatment teachers received 93 hours centered around Intel Math, an 80-hour professional development workshop which enhances teacher understanding of mathematical concepts through an intensive summer training period. The researchers conducted descriptive analyses to determine the professional development implementation's fidelity. Also, the researchers compared teacher and student outcomes between the treatment and control groups, and thanks to the random assignment, that comparison could be used to attribute the effects between treatment and control to the professional development itself.

Research Findings: The study found effects for teachers, but not on student outcomes. The professional development was in general well implemented regarding mathematical instructional quality. Overall, the professional development has a positive impact on teacher knowledge. However, despite positive impacts on teachers, there was no correlation between teacher knowledge or practice and student achievement.

Implications: This study reinforces the manner in which the numerous facets of research-based professional development – from having professional development be time-intensive to having a focus on content knowledge – must interact with one another for professional development to be successful. Studies like this are ultimately good for the field, as they provide focused questions that need to be asked next in this area of study, and logical next steps for providers to follow when crafting math content professional development in the future.