



Reviewing the evidence on how teacher professional development affects student achievement



Summary





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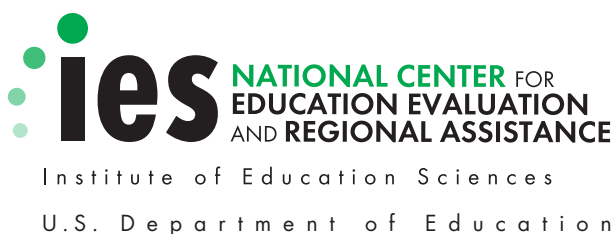
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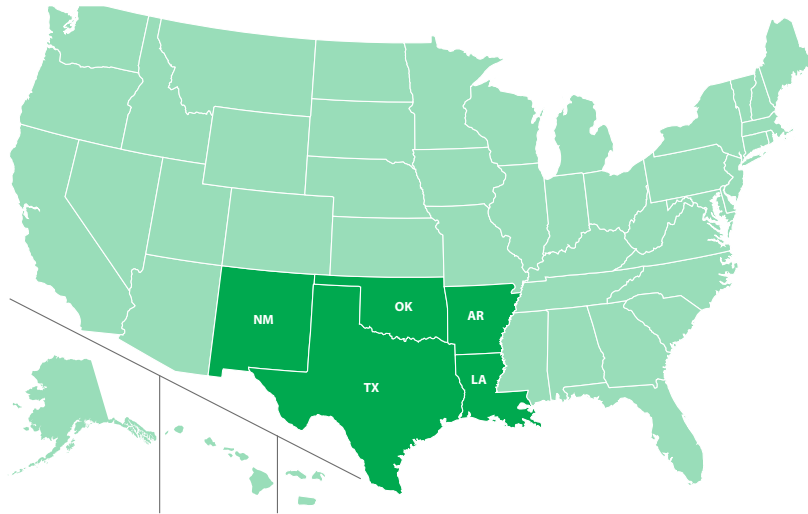
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Of the more than 1,300 studies identified as potentially addressing the effect of teacher professional development on student achievement in three key content areas, nine meet What Works Clearinghouse evidence standards, attesting to the paucity of rigorous studies that directly examine this link. This report finds that teachers who receive substantial professional development—an average of 49 hours in the nine studies—can boost their students' achievement by about 21 percentile points.

How does teacher professional development affect student achievement? The connection seems intuitive. But demonstrating it is difficult.

Examining more than 1,300 studies identified as potentially addressing the effect of teacher professional development on student achievement in three key content areas, this report finds nine that meet What Works Clearinghouse evidence standards. That only nine meet standards attests to the paucity of rigorous studies that directly assess the effect of in-service teacher professional development on student achievement in mathematics, science, and reading and English/language arts.

But the results of those studies—that average control group students would have increased

their achievement by 21 percentile points if their teacher had received substantial professional development—indicates that providing professional development to teachers had a moderate effect on student achievement across the nine studies. The effect size was fairly consistent across the three content areas reviewed.

All nine studies focused on elementary school teachers and their students. About half focused on lower elementary grades (kindergarten and first grade), and about half on upper elementary grades (fourth and fifth grades).

Six studies were published in peer-reviewed journals; three were unpublished doctoral dissertations. The studies were not particularly recent, ranging from 1986 to 2003.

Five studies were randomized controlled trials that meet evidence standards without reservations. Four studies meet evidence standards with reservations (one randomized controlled trial with group equivalence problems and three quasi-experimental designs).

Four focused on student achievement in reading and English/language arts—unsurprising given the large literature in this content area. Two studies focused on mathematics, two on mathematics and reading and

English/language arts, one on science, and one on mathematics, science, and reading and English/language arts.

Only one effect of the 20 identified across the nine studies was negative, and only one effect was zero. The other 18 were positive. The sole negative effect was in a study of mathematics (fractions computation), where traditional instruction showed more positive effects on student achievement than a reform model. The effect was not statistically significant but was large enough to be considered substantively important. The sole zero effect was in a study of reading and English/language arts, where low-achieving students whose teachers were trained to use explicit instructional talk did not demonstrate appreciably greater reading achievement than their counterparts whose teachers attended a presentation on effective classroom management.

Studies that had more than 14 hours of professional development showed a positive and significant effect on student achievement from professional development. The three studies that involved the least amount of professional development (5–14 hours total) showed no statistically significant effects on student achievement.

All nine studies employed workshops or summer institutes. In all but one study follow-up sessions supported the main professional

development event. The exception provided an intensive four-week summer workshop without follow-up support. In all nine studies professional development went directly to teachers rather than through a “train-the-trainer” approach and was delivered by the authors or their affiliated researchers.

Because of the lack of variability in form and the great variability in duration and intensity across the nine studies, discerning any pattern in these characteristics and their effects on student achievement is difficult. A larger number of rigorous studies on the link between professional development and student achievement might have made it possible to determine whether intensive, sustained, and content-focused professional development is more effective.

Highlighting the problems of many studies of professional development, this report can help researchers avoid methodological pitfalls. Especially important is that researchers undertaking studies with quasi-experimental designs provide data on the baseline equivalence of the treatment and comparison groups. Future studies of the effect of professional development on both teachers and students would be particularly useful—studies more fully addressing professional development’s direct effect on teachers and its indirect effect on students.

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