

# MATHEMATICS TEACHER LEADERSHIP: A SUSTAINABLE APPROACH TO IMPROVE MATHEMATICS EDUCATION

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Research on teacher leadership began in the 80s and has continued to gain importance to this day. This poster presentation will describe the impact of a mathematics leadership institute funded by the National Science Foundation. The development and implementation of the institute was informed by research on the key components of effective professional development for teachers (e.g., Desimone, 2009) and on York-Barr and Duke's (2004) conceptual framework for leadership programs. The institute's goals were to increase teachers' math content knowledge and improve their leadership skills and teaching practices. Seventy-nine math teachers with three years or more of teaching experience from two large urban school districts were recruited. Lead teachers participated in the institute during one of three cohorts. Each cohort attended two consecutive summer programs and then received extensive academic-year support throughout the institute's existence. Each cohort began the institute the summer after the preceding cohort had completed its second summer program.

Data for this study included lead teachers' content test scores; results of surveys administered to lead teachers, their colleagues, and administrators at the conclusion of the institute; and classroom observations of lead teachers. Content test scores were analyzed quantitatively (ANOVA - repeated measures) to measure differences in content knowledge from pre- to post-tests. Gains on content tests were statistically significant ( $p < .001$ , Cohen's  $d > 1.35$ ). Survey questions were dichotomous (yes/no) demonstrating agreement to given statements. Percentages of agreement to survey questions were calculated and reported. Agreement with statements about the institute's impact on lead teachers' leadership skills was above 72%. Finally, lead teachers were observed using a classroom observation protocol. Aggregated data on observed lessons were generated. In each of the four major categories of the observation protocol (procedural knowledge, propositional knowledge, lesson implementation, and classroom culture), 70% or more of lessons observed demonstrated exemplary practices. Results indicated that the institute positively impacted lead teachers' understanding of math concepts, equitable instructional strategies, and collaborative leadership skills. The poster will present the complete results and provide opportunities for discussion in further detail.

## References

- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199.
- York-Barr, J., & Duke, K. (2004). What do we know about teacher leadership? Findings from two decades of scholarship. *Review of Educational Research*, 74(3), 255-316.