



Abstract

Maine's Impact Study of Technology in Mathematics (MISTM)



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The *Maine Impact Study of Technology in Mathematics* (MISTM) is an experimental research study designed to examine the impact of a technology-infused professional development program for 7th and 8th grade mathematics teachers on the mathematics achievement of rural middle school students in technology-rich (laptops) classrooms.

The experimental intervention will be an intensive, multifaceted, professional development program designed to prepare teachers to effectively teach low-performing rural students in technology-rich grade 7 and 8 mathematics classrooms. The research will investigate the impact of the professional development program on student achievement, teacher classroom practices, and student and teacher use of technology to enhance mathematics learning.

The professional development program, combines face-to-face workshops, online workshops, peer coaching, site-based mentoring, and online support, and is designed to deepen teachers' understanding of the relevant mathematics, strengthen their pedagogical practices, and enable them to use technology to enhance mathematics teaching and learning. The program incorporates a set of interactive technology tools designed to support middle school mathematics instruction, and prepares teachers to integrate these tools into the curriculum to help students attain the Maine Learning Results standards.

The research will use an experimental design with randomized assignment of schools to treatment and control conditions. Student performance in mathematics on the Maine Education Assessments (MEA) will be a major outcome measure. Additional measures will include pre- and post-tests in mathematics for students; assessments of changes in teacher knowledge and classroom practices; teacher and student use of technology tools; and principal practices in supporting changes in mathematics instruction. Impact of the intervention will be analyzed by student sub-groups and several teacher and school variables.

The research project will help Maine build evaluation and research capability within the state; support the improvement of mathematics achievement in low-performing, rural schools; and establish models of effective professional development that can be extended to other schools and other content areas. It will have national impact in contributing to the research-based knowledge of effective practices in mathematics education and technology integration, ubiquitous computing, professional development, and education in low-income, rural schools.

The project is a collaboration of the Maine Department of Education, the Maine Learning Technologies Initiative (MLTI), the Maine Education Policy Research Institute (MEPRI), and the Education Development Center, Inc. (EDC)

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