



## RESEARCH REVIEW

# Joellen Killion

## Missouri program highlights how standards make a difference

### ► AT A GLANCE

Intensive professional learning for teachers and principals who support and monitor professional learning positively impacts teacher classroom practice and student achievement in mathematics in rural Missouri middle schools.

### ► THE STUDY

Meyers, C., Molefe, A., Brandt, W.C., Zhou, B., & Dhillon, S. (2016). Impact results of the eMINTS professional development validation study. *Educational Evaluation and Policy Analysis*, 38(3), 455-476.

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### ► WHAT THE STUDY SAYS

Professional development designed to integrate key features of research-based professional learning has positive and significant effects on teacher practice and student achievement in mathematics when implemented in schools that meet specified technology-readiness criteria. Key features of research-based professional learning include intensive focus on content-specific and pedagogical practices aligned with new standards, sustained classroom-based and online support over multiple years, and professional learning for principals on monitoring and supporting teacher implementation of newly acquired practices.

### STUDY DESCRIPTION

eMINTS (enhancing Missouri's Instructional Networked Teaching Strategies) is a decade-old professional development program that promotes inquiry-based instruction and learning, high-quality lesson design, community within classrooms among students and teachers, and technology-rich learning environments. This randomized trial evaluation study in 60 rural schools was designed to address limitations of previous evaluation studies and meet criteria of the national What Works Clearinghouse.

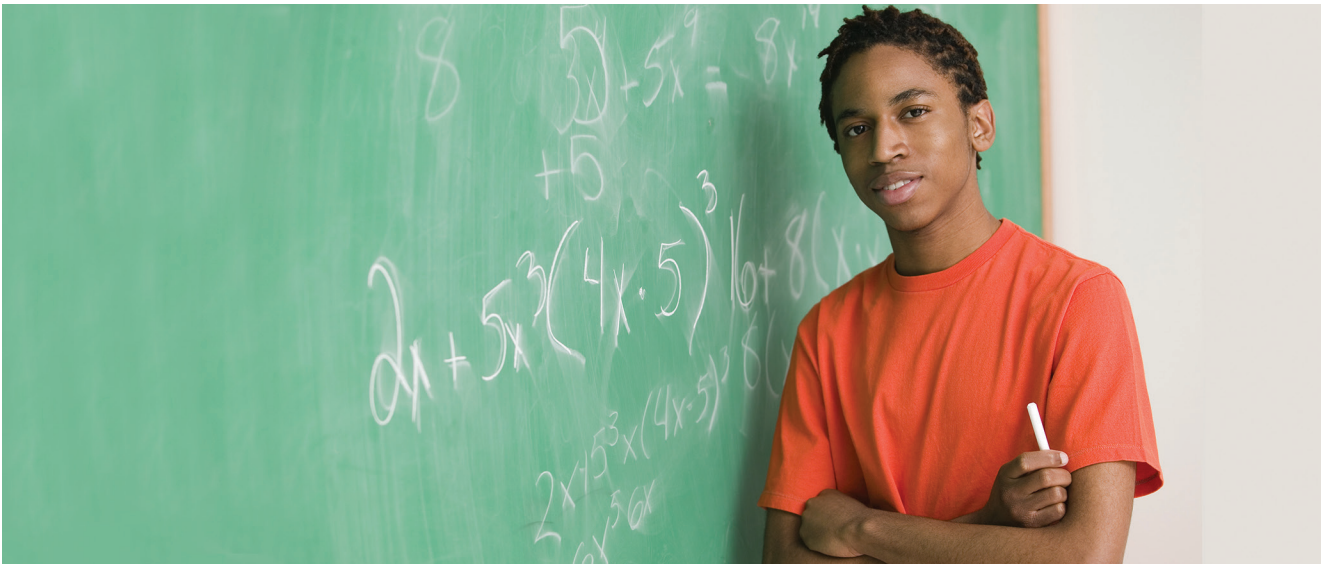
It measured the program's impact on 7th- and 8th-grade students and their teachers blocked into three

configurations of schools (pre-K-8 or K-8; 6-8 or 7-8; and 7-12) and three distinct groups: a treatment group receiving the two-year professional development program, a treatment group receiving an additional third year of professional development (Intel Teach), and the control group.

An eMINTS instructional specialist, assigned to a regional cluster of schools, provided the professional development to teachers, principals, and district or school technology coordinators. Training for teachers included 240 hours of face-to-face professional development spread over two years and 14 hours of coaching sessions and communities of practice among teachers.

Professional development was supplemented with written curricula and just-in-time learning through online courses for extended support. Training in the first year — 125 hours in 26 daylong or half-day sessions — focused on “constructivist pedagogy, community-building strategies, inquiry-based learning strategies, technology integration, and introducing authentic learning experiences into the classroom” (p. 458). The second year's training — 88 hours in 20 sessions — focused on “classroom management, website enhancement, assessment, interdisciplinary teaching and learning, and development of multimedia and online projects” (p. 458).

Principal professional development developed their understanding of



## ► WHAT THIS MEANS FOR PRACTITIONERS

The design, implementation, and evaluation of eMINTS exemplifies the potential of standards-based professional learning to strengthen teacher practice and student results. Each of Learning Forward’s Standards for Professional Learning (2011) is evident in the design and implementation of the program:

- **Learning Communities:** Teachers learned and applied professional learning within learning communities in schools whose culture focused on continuous improvement and collective responsibility for student success.
- **Leadership:** School and district leaders engaged in professional learning and had an active role in monitoring and supporting implementation.
- **Resources:** The program provided equipment and required technology resources necessary for program success, skilled staff, and time for teacher and principal professional learning.
- **Data:** The program’s evaluation used school, teacher, and student data from multiple sources throughout the study.
- **Learning Designs:** Participants experienced multiple learning

designs from face-to-face training in centralized locations, onsite support and coaching, and online courses to meet individual just-in-time learning needs.

- **Implementation:** Teachers received sustained learning and support, a minimum of two years, 240 hours, of face-to-face professional learning, with some receiving an additional year of support, nine to 10 coaching visits within their classrooms, and participation within communities of practice to address individual and collective classroom learning needs.
- **Outcomes:** The overall program goals focused on improving student achievement in mathematics by altering classroom practices of teachers to address new content standards.

When all the Standards for Professional Learning are integrated into a program’s design and implementation, evaluations of programs are likely to achieve results similar to the positive and significant results eMINTS has achieved for over a decade.

### REFERENCE

**Learning Forward. (2011).** *Standards for Professional Learning*. Oxford, OH: Author.

constructivist pedagogy and its application in the classroom and their capacity to use a program-aligned observation rubric for rating teacher performance. Principals worked with eMINTS consultants to support implementation and integrate eMINTS with other initiatives.

Technology coordinators learned how to support technology integration and equipment maintenance. Both principals and technology coordinators had specific responsibilities for supporting application of the four eMINTS components: inquiry-based learning; high-quality, standards-based

lesson design; community of learners; and technology integration.

### QUESTIONS

Researchers sought to answer three overarching research questions in their evaluation:

1. What is the impact of the

- eMINTS Comprehensive Program + Intel Teach on 7th- and 8th-grade teachers' instructional practices?
2. What is the impact of the eMINTS Comprehensive Program and the eMINTS Comprehensive Program + Intel Teach on school mean 7th- and 8th-grade performance in mathematics, communication arts, and 21st-century skills?
  3. What is the impact of the eMINTS Comprehensive Program and the eMINTS Comprehensive Program + Intel Teach on school mean engagement of 7th- and 8th-grade students? (p. 460)

## METHODOLOGY

Researchers, to address limitations of previous evaluations of eMINTS, applied a rigorous randomized trial design to an evaluation of the implementation of eMINTS in rural school systems in Missouri. The 60 schools recruited for the study were randomly assigned to one of three treatment groups: one that received the two-year eMINTS program; another one that received the two-year eMINTS program plus an additional year of professional development and support through Intel Teach; and the control group.

Statistical analyses of teacher, school, and student baseline characteristics demonstrated that the three groups were relatively similar with no statistically significant difference before the study began. The student population included 60% eligible for free or reduced-price lunch; 4% to 7% minorities; 1% to 2% English language learners; and 12% to 14% identified with disabilities. Schools randomly assigned to the control group participated in eMINTS following the conclusion of this study.

## ANALYSIS

The research team used five data sources to measure the program's impact: a teacher survey that assessed their pedagogical beliefs and lesson planning and instructional practices; classroom observations conducted by certified observers using the Classroom Assessment Scoring System — Secondary (CLASS-S); student-engagement survey; Missouri Assessment Program's results in mathematics and communication arts; and 21st-Century Skills Assessment, a measure of students' skill in identified 21st-century skills. Analyses compared baseline data gathered in 2011 and post-implementation data collected in 2014.

## RESULTS

Analysis of student outcomes applied a two-level hierarchical linear model using student scores nested within schools and regression adjusted for effects within schools weighted by the number of schools within each group. Both eMINTS and eMINTS + Intel Teach groups had positive and statistically significant effect on student mathematics achievement, yet no statistically significant effects between treatment groups and control group on student engagement, communication arts, or 21st-century skills. There were also no statistically significant differences between the two treatment groups.

Teacher survey results indicate a statistically significant effect in inquiry-based learning and high-quality lesson design between the treatment and control groups, with positive yet not statistically significant differences in community of learners. Analysis of data from classroom observations resulted in statistically significant positive effects for both treatment groups for community of learners, inquiry-based learning, and technology integration, with no significant differences between the treatment groups and the control group.

## LIMITATIONS

This evaluation study sought to address limitations of previous studies. Earlier studies of eMINTS failed to meet the What Works Clearinghouse research standards for rigorous design and inclusion of schools representing multiple states or populations. This study's application of a randomized trial within rural middle schools directly addresses the limitations of nearly a decade of evaluation studies within elementary schools in urban and suburban settings. Previous evaluation studies, like this study, resulted in positive and statistically significant effects for teachers and students.

Because leadership is a crucial factor in supporting implementation of professional learning, eMINTS included training and expectations for principals and technology coordinators. This factor enhanced the principal's role in professional learning, a component missing from other randomized trial studies of professional learning. Principals, researchers conclude, have the ability to make decisions and changes to integrate eMINTS, maintain momentum and motivation, and handle conflicting policies and initiatives.

Researchers did not examine the relative influence of individual mediators or moderators or program foci (lesson planning, technology integration, community of learners, or inquiry-based learning). Knowing if specific foci or mediators had a greater effect than others or if the program's intensity could be abbreviated without impairing the effects would be of interest to professional learning decision makers and policymakers. Because this study included only rural middle schools, it is not possible to generalize results to other populations. ■