Research Questions

- What effect do the NJ PEMSM activities have on teachers’ mathematical knowledge, especially knowledge for teaching?
- What effects of increased knowledge in mathematics can be observed in teachers’ work in their own classrooms?
- What measurable gains are observed in mathematical proficiency, depth of mathematical understanding, and academic achievement by the students of participants in NJ PEMSM?
- To what extent and through what processes do the teachers exercise leadership roles in their school districts (e.g., facilitating content-based professional development)?

Evaluation

External assessments

Research for Better Schools (RBS) is conducting an evaluation study to ensure the effectiveness of NJ-PEMSM, measuring the extent to which the program contributes to:

1. Increases in teachers’ mathematical content knowledge and pedagogical content knowledge;
2. The development of teachers’ abilities to provide leadership within their districts;
3. Improved academic achievement in mathematics among students.

Internal assessments

NJ PEMSM regularly reviews and revises its programs and practices based on feedback from partner districts, teacher participants, staff, and an advisory board.

The New Jersey Partnership for Excellence in Middle School Mathematics

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NJ Partnership for Excellence in Middle School Mathematics

Partner School Districts
Berkeley Heights, Carteret, Edison, Elizabeth, Franklin, Linden, Long Branch, Matawan-Aberdeen, North Brunswick, Old Bridge, Orange, Plainfield, Sayreville, Toms River, Union Township

Rutgers University Units
Department of Mathematics
School of Arts and Sciences
Robert B. Davis Institute for Learning
Graduate School of Education
Center for Mathematics, Science, and Computer Education
Office for the Promotion of Women in Science, Engineering, and Mathematics

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Goals

To prepare a cadre of mid-career middle school mathematics teachers who

- understand the mathematics of middle school more deeply,
- engage their students more effectively in studying and learning mathematics
- take on leadership activities such as facilitator of in-house content-based professional development for their colleagues

Participant Support

The NSF grant will support four cohorts of experienced teachers as they complete the NJ PEMSM Institute program, and take on peer leadership roles in their districts. Teachers admitted to the Institute will receive PEMSM Fellowships providing summer stipends and covering tuition and student fees. Each cohort consists of 25-30 teachers from grades 6, 7, and 8.

Partner Districts

The partnership currently includes 15 partner school districts. We hope to sustain some partnership activities beyond the life of the grant.

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Expected Benefits

For Teachers

- Seven masters-level courses at Rutgers University. Tuition and fees are waived
- Stipends for successful completion of each Summer Institute
- Courses can be applied to a M. Ed. in Math Education (contingent on admission to GSE).
- The content courses satisfy requirements for a Middle School Math Specialization Endorsement.

For Students

- More mathematically meaningful, engaging instruction to improve computational fluency and conceptual understanding of mathematics
- A supportive learning environment that facilitates the development of confidence and competence in mathematics
- Motivation and self-confidence to engage with increasingly challenging curricula – especially the introduction of algebraic reasoning and the transition to more formal algebra

For New Jersey

- Student proficiency in mathematics leading to increased opportunities, a more productive workforce, and a more prosperous economy
- An increased ability for NJ residents to understand the mathematics we all face in our daily lives.

NJ-PEMSM Institute

The Institute provides a structured program of seven graduate courses at Rutgers University over two years: Seminar in Mathematical Ideas; Number, Operation, and Algebra; Geometry and Measurement; Motivation and Affect; Lesson Study on Mathematical Reasoning; Data and Probability; Problem Solving with Discrete Math.

The Institute also includes a series of workshops on special education in mathematics, and a teacher leadership development program. As space permits, the workshops on special education in mathematics will be open to all teachers in the partner districts.

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