Teacher Preparation Courses at the University of Wisconsin-Milwaukee

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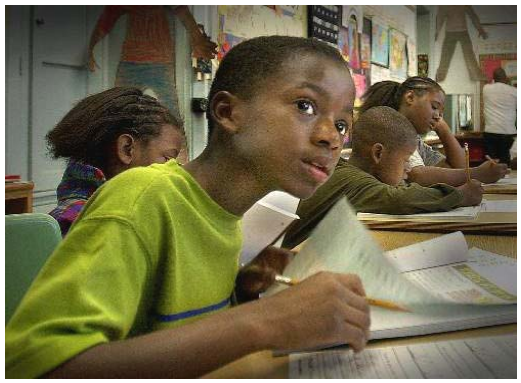
MMP Project Goal: Teacher Learning Continuum

Build and sustain the capacity of teachers, from initial preparation through induction and professional growth, to deeply understand mathematics and use that knowledge to improve student achievement.



UW-Milwaukee Teacher Preparation Programs

- Early Childhood (ECE, Birth-age 8)
- Middle Childhood through Early Adolescence (MCEA, grades 1-8)
- Early Adolescence through Adolescence (EAA, grades 6-12)

MCEA Program Structure

Required of all MCEA students: 2 content area minors, 18 semester-hours each

Option A:

- **Mathematics** or Natural Sciences

Option B:

- Social Studies
  or English/Language Arts
  or Bilingual/ESL/World Languages

MET Report Recommendations

- Prospective teachers need math courses that develop deep understanding of the mathematics that they teach.
- Mathematical education of teachers should be a partnership between math faculty and math education faculty.
- There needs to be more collaboration between math faculty and school teachers.

Conference Board of the Mathematical Sciences. (2001). *The mathematical education of teachers.* Providence, RI: American Mathematical Society and Mathematical Association of America.

MMP Design Team Philosophy

- Mathematics faculty provide rigorous mathematics content.
- Mathematics education faculty focus on mathematical knowledge for teaching.
- Teachers-in-Residence (teachers on special assignment at UWM) make connections to classroom practice in urban settings.

Mathematics Focus Courses for MCEA Majors

- Problem Solving
- Discrete Probability and Statistics
- Geometry
- Algebraic Structures

Other Design Team Courses

- Mathematical Explorations for Elementary Teachers, I
- Mathematical Explorations for Elementary Teachers, II
- High School Mathematics from an Advanced Perspective

How do preservice teachers compare to inservice teachers on measures of mathematical knowledge for teaching?

- Do preservice teachers demonstrate stronger MKT than inservice teachers? Can we impact and improve the MKT of preservice or inservice teachers? Which group might make larger gains on MKT? Why?

Subjects

Preservice Teachers

- Math Foundations (EC & Gr 1-8)
- Math Minor (Gr 1-8)

Inservice Teachers

- Math Assessment Leaders (Gr K-7)
- Math Teacher Leaders (Gr K-8)

Context: Geometry

Preservice Teachers

- Math Foundations: Half of a 3-credit course
- Math Minor: 3-credit course plus Foundations

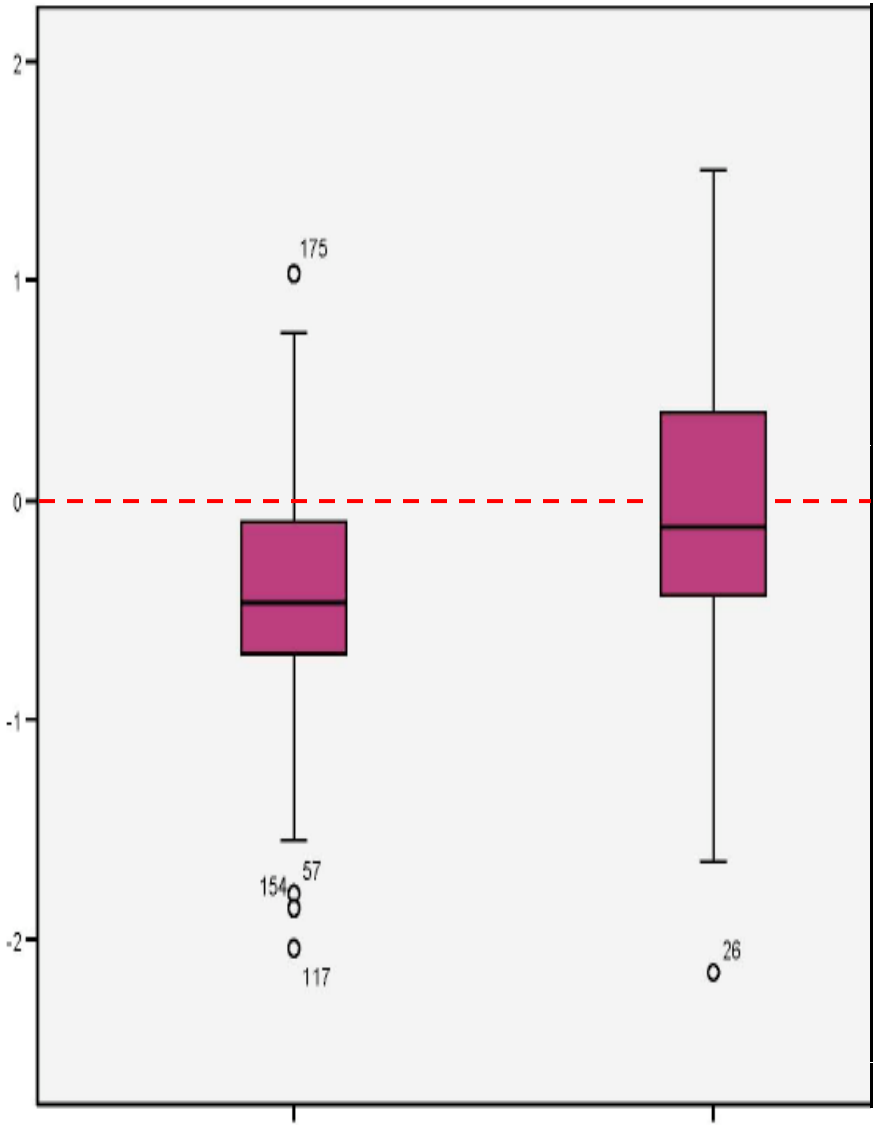
Inservice Teachers

- Assessment Leaders: Monthly PD ~14 hours
- Teacher Leaders: Monthly PD ~16 hours

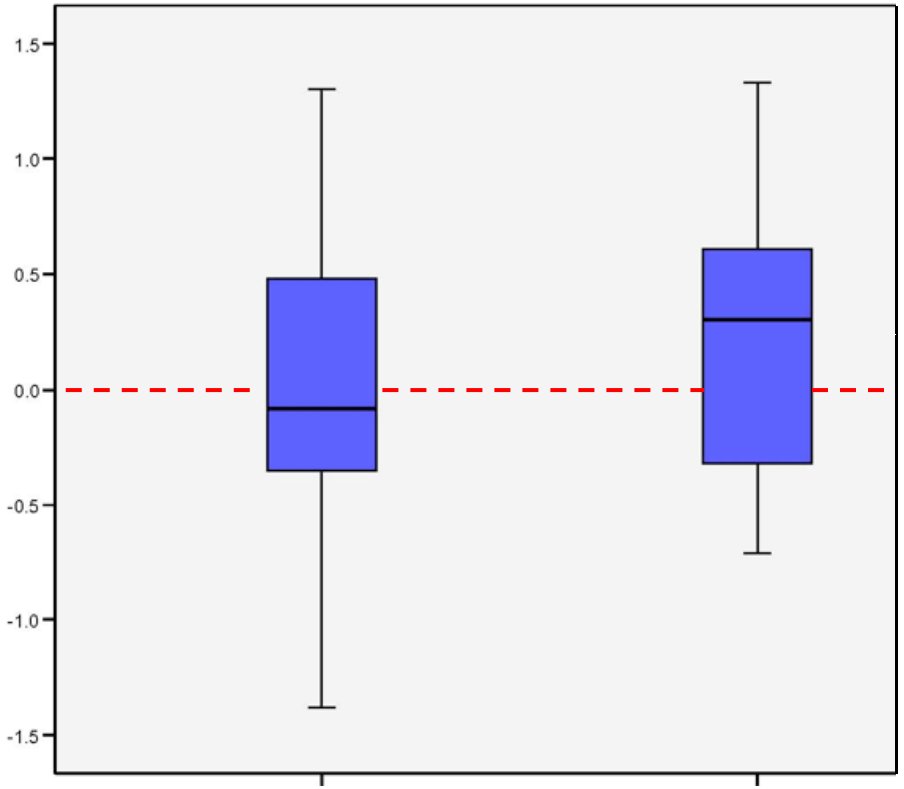
Instrument

- MKT Geometry & Measurement Items
- Project built scale
- 22 items (multiple choice)
- Item Response Theory (IRT) scores: Two-parameter model to estimate ability
- Pretest & Posttest: Same instrument

Preservice Results: MKT Geometry

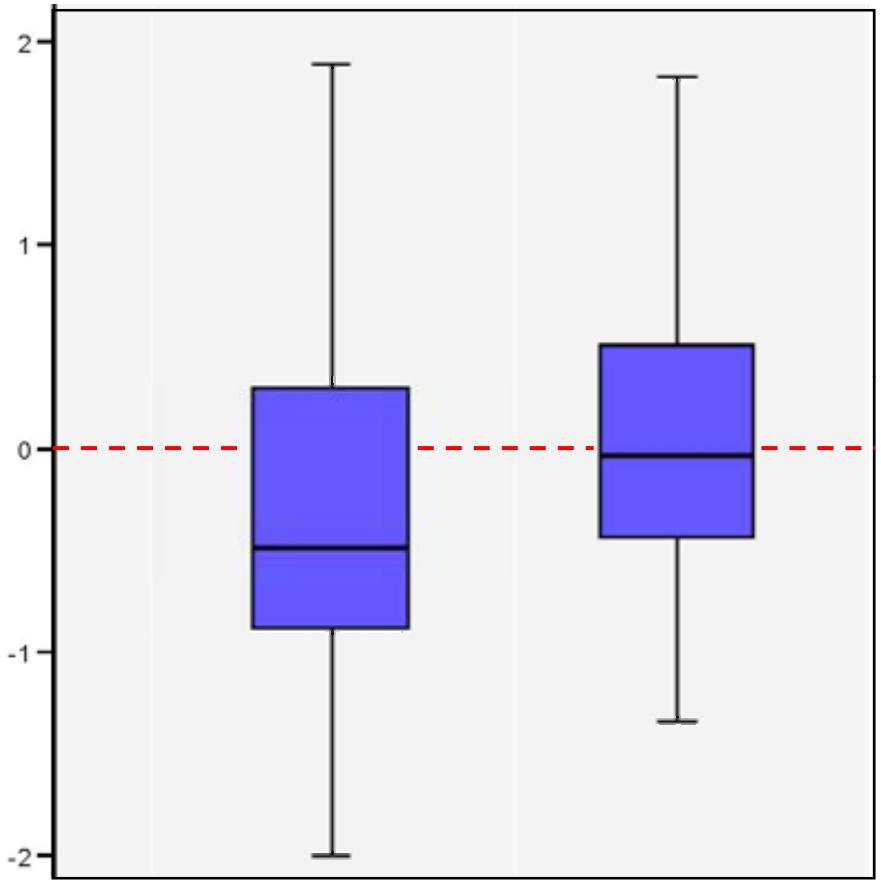


Math Foundations (n = 204)

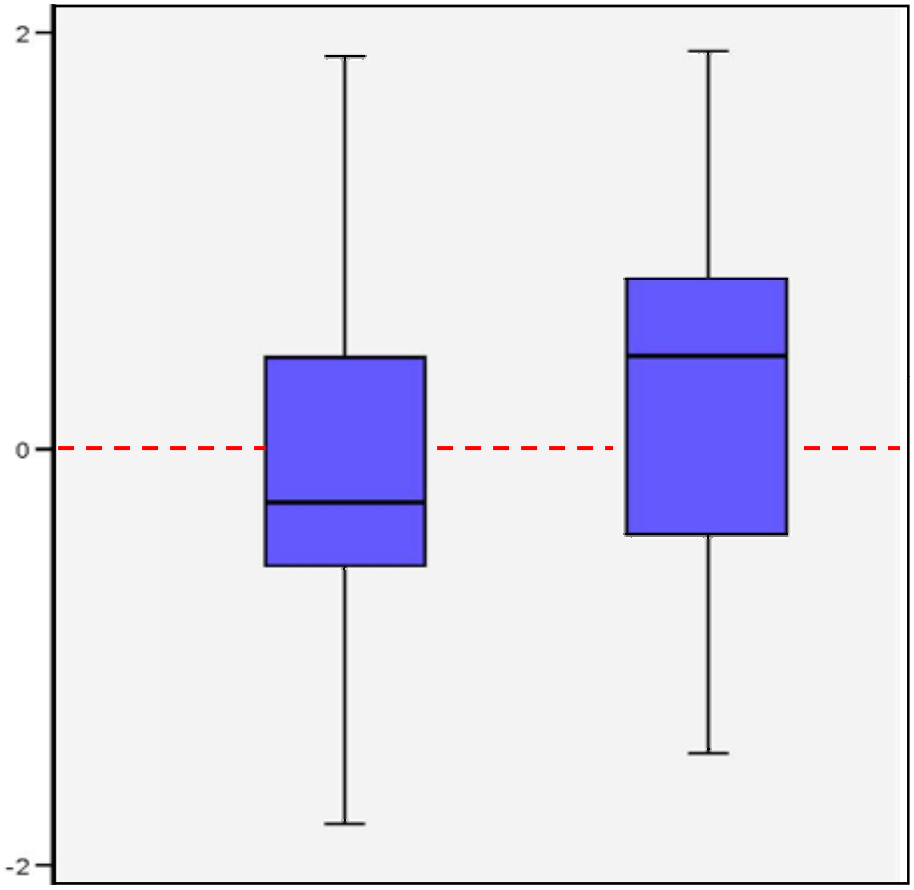


Math Minor (n = 24)

Inservice Results: MKT Geometry



Assessment Leaders (n = 62)



Math Teacher Leaders (n = 79)

Results MKT Geometry

	N	Pretest (SD)	Posttest (SD)	Change	Sig
Preservice: Foundations	204	-0.43 (0.55)	-0.04 (0.58)	0.39	.000
Preservice: Math Minor	24	-0.03 (0.61)	0.24 (0.62)	0.27	.006
Assessment Leaders	62	-0.36 (0.75)	0.09 (0.69)	0.45	.000
Math Teacher Leaders	79	-0.10 (0.78)	0.34 (0.81)	0.44	.000

Instrument Source: The University of Michigan, Learning Mathematics for Teaching (LMT) Project.

MMP website

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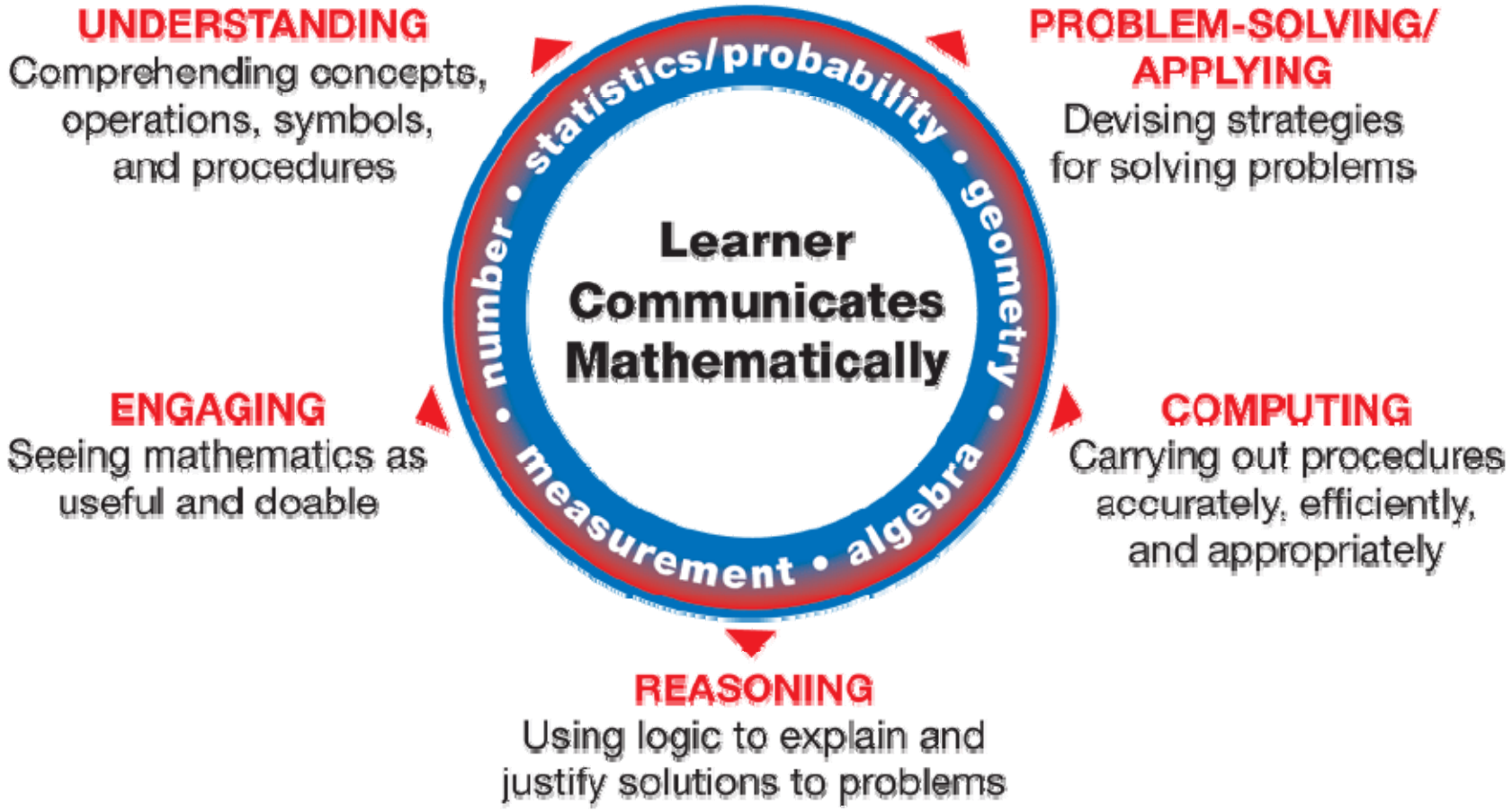
MILWAUKEE MATHEMATICS PARTNERSHIP

Comprehensive Mathematics Framework



Mathematics Proficiency For All Students