Mathematics Intervention (MI) Classes: classes that schools offer in addition to core math classes to support students with math difficulties. MI classes are not homework help clubs, study halls, or separate special ed. classes.

**Needs:**
- Before this project, little was known about US schools’ math intervention practices, structures, and challenges at the middle grades.
- Teachers need PD that is focused on intervention classes, helping them to provide effective instruction and support for students with math difficulties.

**Goals:**
- Study the national landscape of math intervention classes at grades 6-8.
- Apply study findings to create a PD course specifically for math intervention teachers and test it.

**PHASE 1: LANDSCAPE STUDY**
We conducted an observational study and a national survey of a random sample of 2,024 public schools (urban and suburban) with grades 6-8, stratified by U.S. Census region and percent of students with free and reduced-price lunch (FRPL). 876 schools responded (43%). One respondent per school.

69% of schools had mathematics intervention classes for middle grades students (2016 – 2017).

**Class Size**
- 16% of schools had 5 students.
- 36% of schools had 6-10 students.
- 25% of schools had 11-20 students.
- 18% of schools had 21-30 students.
- 10% of schools had more than 30 students.

**Frequency**
- 4% of schools had 1 day per week.
- 17% of schools had 2 days per week.
- 20% of schools had 3 days per week.
- 10% of schools had 4 days per week.
- 43% of schools had 5 days per week.

**Scheduling**
- 34% of schools had a scheduled time.
- 51% of schools had an unscheduled time.
- 15% of schools had no schedule.

**Primary Content Focus**
- Rational numbers: 30% of schools.
- Fractions, decimals, integers: 44% of schools.
- Expressions & equations: 26% of schools.

**Common Challenges**
- Students in MI classes have a wide range of learning needs: 93% of schools.
- Some students feel negatively about being in MI classes: 79% of schools.
- Little or no professional development on intervention practices: 66% of schools.

**PHASE 2: PD COURSE**
We created a hybrid PD course for MI teachers:
- 15 full-day sessions; 5 online sessions (async); 4 1-hr virtual meetings (sync).
- 70 hours of PD sustained over one school year.
- Fractions, Decimals, Integers, Expressions & Equations.
- Instructional Practices.
- Formative Assessment Approaches.

**Research Question:** After participating in the SMI course, to what extent do teachers show increases in their knowledge, practices, and self-efficacy for teaching struggling learners in mathematics intervention classes?

**Sample**
- 28 intervention teachers (grades 5-8).
- 15 urban, suburban, and rural districts in MA & ME.
- Participated in pilot of full course (70 hours /9 months).

**MEASURES**
- MKT instrument.
- MTSES Self-efficacy instrument.
- Preparedness for teaching students with math difficulties.
- Mathematics Mindset Beliefs items.
- Instructional Practices survey.
- Classroom observations and interviews.
- Course evaluation surveys.

**FINDINGS**
- MKT: statistically significant increase for rational numbers.
- Self-efficacy: statistically significant increase.
- Preparedness for teaching students with math difficulties: statistically significant increase.
- Instructional practices: increase in reported frequency of using six practices that were emphasized in the PD.
- Mindset beliefs: no significant changes.
- Evaluation: 89% rated course as very useful; 11% as useful.
- 100% would recommend the course to MI teachers (n:28).

**LEARN MORE**
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