Introduction

Academic institutions, regional systems, and national organizations have successfully applied change management science to achieve widespread adoption of providing new entry-level mathematics options that are more relevant to diverse degree programs and replacing sequences of remedial courses with corequisite support for students placed directly in credit-bearing courses.

In addition to these structural changes to entry-level college mathematics, reform movements have called for
1) increased use of active learning techniques,
2) incorporation of meaningful applications, and
3) attention to broader academic success skills.

Purpose of the MIP

The Mathematical Inquiry Project (MIP) complements principles of organizational change science with social learning theory to foster effective, scalable, and sustainable cultural shifts in mathematical learning through inquiry defined in terms of active learning, meaningful applications, and academic success skills in each of the new gateway courses Quantitative Reasoning, Modeling, College Algebra/Precalculus, and Calculus 1.

With the support of the Oklahoma State Regents Office for Higher Education and the collaboration of the public colleges and universities in Oklahoma, the MIP capitalizes upon the ongoing statewide reform movement to nurture and sustain a Community of Practice to generate grassroots faculty support and capacity for sustainable large-scale reform and contribute to research on faculty and institutional and cultural change for this vision of learning through inquiry.

What is Mathematical Inquiry Learning?

Active Engagement
Students work independently and collaboratively on challenging problems

Meaningful Applications
Students explore conceptually meaningful applications that are relevant to their academic and career pathways

Academic Success Skills
Students gain crucial life skills like problem-solving and persistence and build a growth mindset that supports success in their educational and career pathways

MIP Activities

We are using a multi-tiered approach to address these goals and maximize buy-in from mathematics faculty across all 27 public colleges and universities in Oklahoma. Each new stage involves participation from increasing numbers of faculty. By the conclusion of the project, the MIP will have created a large network of faculty at each institution in Oklahoma who have contributed to, and are thus invested in, the success of efforts to implement mathematical inquiry on a large scale.

• Initiation Workshops—The MIP is launching with five 5-day Initiation Workshops with mathematics faculty from institutions across the state of Oklahoma. We are hosting one workshop for each of the new gateway courses and one for academic success skills.

• Collaborative Research and Development Teams (CoRDs)—The MIP will organize and support 25 CoRD teams, each consisting of 3-5 faculty. The goal for these teams is to develop instructional modules for the core concepts identified in the initiation workshops.

• Regional Workshops—in the next stage, the MIP will foster full-scale faculty development by conducting 40 single-day Regional Workshops, each engaging local faculty in implementing modules led by members of the respective CoRDs.

• Faculty Peer Mentoring—The MIP will support 425 semester-long faculty mentor relationships between one emerging leader and one or two faculty to support the their classroom implementation of MIP resources.

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