



# Developing A System of Practical Measures, Routines and Representations to Inform and Enhance Middle-Grades Mathematics Instructional Improvement Initiatives

Download the classroom measures, view publications, and more!  
[www.pmr2.org](http://www.pmr2.org)

## Goal

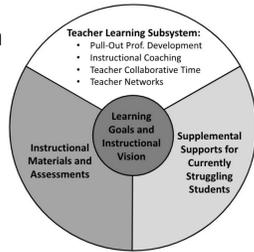
To develop a **system of measures, routines, and representations** that can support the implementation of **strategies** aimed at improving the quality of middle-grades mathematics teaching, and thus student learning.

## Theory of System-Wide Improvement

**Prior research:** Identify potentially productive instructional improvement strategies

- o Coherent instructional system
- o School leadership
- o District leadership

**Current research:** Reliably implement improvement strategies



## System of Practical Measures, Routines & Representations

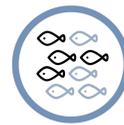
### Measures of Key Aspects of High-Quality Mathematics Instruction



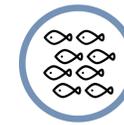
**rigor of the task**  
 rubric designed to be used by a coach or district leader with a teacher to assess and discuss the rigor of the task(s) used for a specific lesson



**launch of the task**  
 student survey that assesses whether students can begin to work productively on the task



**small-group work**  
 student survey that provides information about students' experiences with key aspects of small group work



**whole-class discussion**  
 student survey that provides information about students' experiences with whole-class discussion in a specific lesson

## Multiple Users and Routines of Use

The measures & representations were designed to be meaningful to **users** at different levels of the system:



The measures & representations have been **used** to inform the implementation of a range of improvement strategies in our partner districts, including:

- (1) curriculum guide writing initiative
- (2) one-on-one coaching
- (3) professional development program

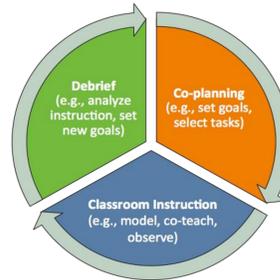
**Routines** (e.g., protocols) have been developed to support using the resulting data to guide inquiry into *mathematics teaching* and *professional learning*

## Practical Measures for Improvement

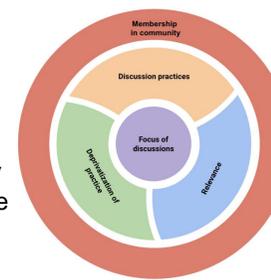
- Unobtrusive and minimally burdensome to users
  - o Quick to administer (< 3 minutes)
  - o Easy to analyze
  - o Enable practitioners to assess and adjust their practices
- Intended for improvement work, not for accountability purposes
- Used to determine whether a deliberate change in practice is an improvement
- Analyses indicate the use of the measures can enhance the quality of supports for teachers' learning

### Measures of Key Aspects of High-Quality Professional Learning (in progress)

**one-on-one coaching**  
 two teacher surveys that provide information about teachers' experiences during the co-planning and debrief phases of a one-on-one coaching cycle



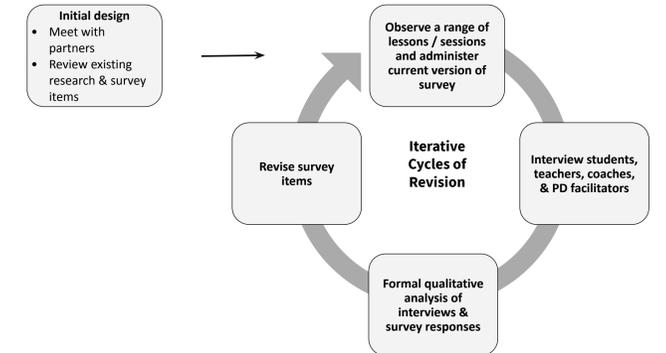
**collaborative professional learning**  
 teacher survey which provide information about teachers' experiences of five key aspects of collaborative professional learning



## Attending to Validity

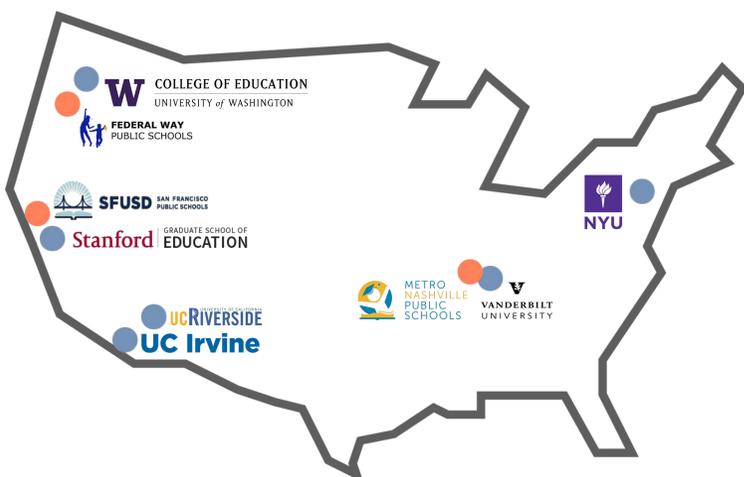
### In Design

The measures were developed through multiple rounds of design, analysis and revision:



## Partnerships

Our team is comprised of three Research-Practice Partnerships (RPPs) between U.S. school districts and universities.



### Infrastructure for Storing, Analyzing, and Representing Data

## edsight.io



EdSight provides users (e.g., coaches, teachers) with an opportunity to investigate data from the measures for individual sessions/lessons and longitudinally. Users can set and track goals.

A coach / district leader-facing snapshot of the Edsight platform with data from administrations of the survey with a group of 6th, 7th, and 8th grade teachers over time:



### In Use

Systematically investigating the inferences made and actions taken by the various users in relationship to the specific **purposes, key aspects of school and district contexts, and users' current perspectives and practices.**

This work is supported by the National Science Foundation (grants #1719744, #1620851, #1621238, and #1620863). Any opinions, findings, and conclusions or recommendations expressed in these materials are those of the authors and do not necessarily reflect the views of the National Science Foundation.

