

## What Teachers Are Saying About MDC

*When they can't answer a question, they turn to me with that 'what do I do now' look. I used to give them an answer at that point; now, I have learned to ask more questions to help them figure it out.*

**Linda B., Math Teacher, Arkansas**

*My instructional delivery is quite different now that I embrace the MDC strategies. Rather than teacher-led lectures and demonstrations, I focus more on student-based learning. Since implementing MDC, my students are now taking more responsibility for their own learning.*

**Toni C., Algebra I Teacher, Mississippi**

*A student told me she loved the FALs because they made her feel smart. This student was not typically an A or even a B student, but she felt accomplished while working on these lessons.*

**Helen D., Geometry Teacher, New Mexico**

*Students are learning to work together collaboratively (using each other as resources), learning to ask appropriate questions of each other and me, and learning to justify work and critique each other. My students are becoming critical thinkers and are no longer just accepting an answer at face value.*

**Tiffany M., Math Teacher, North Carolina**

*Our classrooms have moved from traditional math instruction to a collaborative environment where students are completely engaged in the learning. MDC has changed the way math teachers think about instruction.*

**Rodney W., Principal, Arkansas**

## MDC Classroom Protocol

An important part of SREB's professional development design is visiting classrooms to provide feedback to teachers about the progress they are making implementing MDC. In order to provide targeted feedback to teachers, SREB developed an MDC Classroom Protocol that describes the teacher and student behaviors that occur when MDC is implemented with fidelity. The MDC Classroom Protocol is aligned with the instructional practices that are identified in common teacher observation tools, such as the Danielson Framework for Teaching.

SREB trainers and SREB's director of school development work directly with school administrators on the use of the MDC Classroom Protocol to ensure that MDC practices are continually monitored and evaluated, and MDC teachers receive timely feedback about their progress and continued support.

## Two Critical Roles of the Principal

As instructional leaders of their schools, principals are essential for any major initiative to have an impact on teaching and learning. Two critical roles of the principal in the successful spread of MDC include the ability to:

- 1) Understand what MDC looks like in a classroom and be able to give teachers feedback that will help their progress.
- 2) Create, monitor and sustain effective **Professional Learning Communities (PLCs)** where MDC teacher-facilitators can guide other math teachers in spreading MDC practices.

SREB is committed to working with school leaders through every step of the implementation process. Principals should:

- Attend MDC training sessions with their teachers to better understand the big picture of MDC and the types of changes they can expect to see from teachers and students. Breakout sessions designed specifically for principals are conducted during these trainings and are facilitated by SREB staff.
- Join SREB and local district trainers during school visits and MDC classroom observations; collaborate with the trainers and give teachers feedback on their planning and instruction.
- Attend a two-day workshop in year one to learn how to use the MDC Classroom Protocol to improve teaching and learning, how to redesign the school schedule to support teacher collaboration and planning, and how to create and sustain effective **PLCs** to promote the spread of MDC in their schools.
- Attend follow-up workshops in years two and three to learn strategies for implementing MDC schoolwide.

## Virtual Support

In addition to direct, face-to-face training and coaching, SREB's training plan includes virtual support through online courses and learning communities, webinars, screencasts and video conferencing. Also, MDC teachers will be invited to join the larger MDC community by connecting with other teachers around the country through social networking venues.

## CONTACT INFORMATION

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## Mathematics Design Collaborative Training for Schools and Districts

The **Mathematics Design Collaborative (MDC)** provides schools with instructional tools needed to help teachers understand and implement college- and career-readiness standards effectively while allowing teachers the flexibility to select topics and adapt assignments to their specific instructional plans.

**MDC** uses formative assessment lessons (FALs) to engage students in a productive struggle that builds fluency with their procedural skills, and deepens mathematical reasoning and understanding. Students participate in both individual and group learning as teachers use FALs and questioning to check for students' understanding and to correct common misconceptions. Rather than following predetermined steps to find an answer (the "GPS" approach), students are supported to deepen their mathematics reasoning to solve problems.

The MDC process equips teachers with research-based strategies and a process for analyzing learning in the mathematics classroom. To fully implement the formative assessment lessons, teachers need to understand changes in classroom instruction and have the support to make the changes.

SREB trainers have worked with thousands of teachers since 2010 to spread MDC over schools and districts in 38 states. These teachers have remarkable stories to tell about how MDC engages and motivates students to learn and how it impacts their teaching and student achievement. Read more here:

[http://publications.sreb.org/2014/14V10\\_LDC\\_MDC\\_Vignettes.pdf](http://publications.sreb.org/2014/14V10_LDC_MDC_Vignettes.pdf)

## How is the Mathematics Design Collaborative Different From Traditional Mathematics Instruction?

The Shell Centre in England and the University of California at Berkeley together produced a series of formative assessment lessons (FALs) for grades six through high school focused on advancing student mathematical understanding and problem-solving skills. FALs follow a common structure:

- Students are given an initial assessment. This provides teachers with a qualitative sense of their students' grasp of the targeted math standards.
- Teachers analyze data from the assessment task and use it to group students and develop feedback questions based on students' misconceptions.
- Students immerse in mathematics through a collaborative activity in small groups, engage in discussion, take responsibility for their own learning and learn from each other, often by examining each other's work. Teachers provide feedback questions to move students' learning forward without giving them step-by-step procedures for solving the problem.
- Students engage in a whole-class discussion, which pulls the lesson together, strengthens students' understanding of the concepts involved and allows teachers deeper insights into their students' learning gaps.
- Students return to the initial task to redo the assignment, applying what they have learned while providing teachers with feedback on the effectiveness of their instruction. The strategy underlying the FALs enables students to understand math concepts and put these into practice. Application of math is often lost when the focus is on the development of discrete procedural skills.

Traditional Classroom	MDC Classroom
Teacher as lecturer	A balance between direct and facilitated instruction
Teacher as expert	Student as expert
Teaching focused	Learning focused
Students working individually	Students working in pairs or small teams
Step-by-step instruction	Instruction focused on key concepts with students identifying multiple solution pathways
Students completing pen- and-paper problems	Students completing lessons that allow for understanding through the use of technology and hands-on manipulation
Only the teacher discussing math or using math terminology	Students actively discussing math and using math terminology in both oral and written formats
Teachers guiding students through a series of steps to solve problems	Teachers posing questions to develop students' abilities and reasoning through multi-step math problems.

FALs are built around a set of rich learning tasks connected to college- and career- readiness standards to be embedded within a teacher's curriculum. FALs strive to develop deep understanding of key math content.

MDC encourages teachers to use FALs at least once during a unit that are aligned to key concepts being studied. Individual teachers decide which lessons will be used. Some FALs are designed to be used two-thirds of the way through a unit to raise questions and check for students' understanding; others should be used every month or two to assess students' abilities to reason through non-routine problems.

### SREB's Four-Element Training Approach

SREB's goal is to significantly increase the percentage of students meeting college- and career-readiness goals. SREB aims to build capacity and sustainability within schools and districts by developing local expertise and talent to foster momentum through successful spread of MDC practices. SREB's professional development concept includes a four-element training approach that involves principals, district-level or regional trainers, and classroom teachers.

**Element 1 – Build Capacity of Teacher Facilitators:** SREB provides MDC training sessions to a select group of teachers in a school. These teachers become MDC teacher facilitators who are proficient in using the MDC tools and strategies so they can work with other teachers in the school to adopt MDC practices.

**Element 2 – Develop District- or Regional-Level Trainers:** SREB guides trainers through the MDC trainer certification process. The local trainer is responsible for the day-to-day support of MDC teams throughout the district.

**Element 3 – Conduct Classroom Observations and Provide Teacher Feedback:** SREB- and local-level trainers plan a series of school visits between MDC training sessions to conduct classroom observations, provide feedback to teachers and to attend the MDC teams' professional learning community meetings.

**Element 4 – Work With Principals:** SREB and local trainers meet with principals to conduct observations in MDC classrooms that focus specifically on evidence that MDC is being implemented with fidelity.

### SREB'S Three-Year Training Plan

SREB uses teachers and principals to move all students toward college and career readiness. After three years, schools and districts will have trained enough teachers to go schoolwide with FALs.

**Year One:** With nine days of training, SREB will prepare select teachers from each school to implement six to eight FALs. These teachers build excitement among their peers.

**Year Two:** To spread beyond year one, SREB and local trainers prepare year one teachers and school leaders to leverage PLCs and engage other math teachers with MDC schoolwide.

**Year Three:** SREB and local trainers work together to spread MDC schoolwide and to additional schools in the district.



### Developing District-Level Trainers

A key component of SREB's professional development plan is the district-level trainer, who supports and sustains MDC practices in all district schools. Participating districts must dedicate a math person to become a certified MDC trainer in year one. The district-level trainer will meet the following certification requirements by the end of year one:

- Attend all trainings, webinars, electronic coaching and site visits.
- Launch a FAL in a classroom with students.
- Complete a Formative Assessment Anticipation Guide Form before the implementation of a formative assessment lesson. Analyze pre-assessment data to determine student misconceptions.
- Complete an Analyzing Student Data Form after pre- and post-assessments to determine student growth.
- Support lead teachers and school leaders in all schools in the district/region/cohort and assist with initial feedback reports to schools and provide remaining feedback to schools.
- Master classroom observations using college- and career-readiness best practices in mathematics. Provide effective feedback to teachers on how to do this collaboratively with principals.
- Conduct six rounds of school-embedded training and provide feedback to the remaining schools in the cohort that were not visited by SREB MDC trainers.