Responsive Math Teaching Model
Responsive Math Teaching Project

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Responsive Math Teaching Model

Abstract
The Responsive Math Teaching (RMT) Model breaks high-quality math teaching down into six core components:

1. Plan: Select or adapt an appropriate task, identify the mathematical goal(s), and anticipate possible solution paths and challenges.
2. Launch: Set up the task so that students understand the problem and can access the important mathematics.
3. Facilitate productive struggle: Support students to engage in authentic problem solving.
4. Discuss learner thinking: Facilitate the sharing of student strategies and reasoning and engage students in making sense of each other’s thinking.
5. Return to mathematical goal: Guide students to make explicit connections between strategies and solutions and the key mathematical ideas.
6. Reflect: Reflect on pedagogical and learning goals to determine next steps.

Keywords
education, teaching, math, teacher learning, professional development, math education, mathematics, instructional model, math classroom, instruction

Disciplines
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REFLECT ON PEDAGOGICAL AND LEARNING GOALS
• examine learners’ work for evidence of developing understanding and issues that need to be addressed
• analyze evidence of learner participation, identity, and/or group processes
• review video and/or observation notes in relation to professional learning goals.

PLAN AND ANTICIPATE
• identify and unpack the mathematical goal
• adjust the lesson or activity based on the evidence from prior lesson(s)
• select or adapt a task that provides students with a problem to solve rather than a procedure to follow
• anticipate multiple solution paths, accessibility of context, language challenges.

SET UP THE TASK
• develop individual and collective understanding of task, context, and language
• elicit and build connections to prior knowledge and experience
• set expectations for working, solution, justification, tools.

SUPPORT STUDENTS AS THEY GRAPPLE WITH THE TASK
• provide opportunities for collaborative work
• circulate, monitor, and interact with students to coach mathematical participation
• support without lowering cognitive demand (ask questions, help students get started).

STEER THE WHOLE CLASS DISCUSSION TO SURFACE THE BIG IDEAS
• guide students to make explicit connections between their strategies and solutions and the key mathematical ideas
• help students formalize ideas by generalizing patterns, solidifying theories and/or proving/disproving conjectures
• connect procedures to concepts
• provide students with the opportunity to apply, revise, or summarize their understanding.

FACILITATE WHOLE CLASS DISCUSSION OF LEARNER THINKING AND WORK
• strategically select and sequence strategies
• elicit multiple strategies and a diversity of voices
• cultivate rich explanations (wait time; asking why and how; revoicing)
• intentionally make space for and assign competence to marginalized and/or low-status student contributions
• represent student thinking visually
• engage students in making sense of each other’s thinking
• connect students’ ideas to standard language, notation, and/or models.

These materials were authored by the Responsive Math Teaching Project and may be used for non-commercial purposes with attribution to the authors. For questions contact rmtproject@gse.upenn.edu