



Teacher Guide to Implementing MC² Thinking Protocol for Comparing Different Student Strategies

Purpose	Activity	Materials
<p>Part 1: Preparation during Professional Learning Community (PLC)</p> <div style="background-color: #003366; color: white; padding: 5px; text-align: center; margin: 10px 0;"> Why a rubric? </div> <p>Establishing the rubric before implementing the <i>Thinking Protocol</i> is crucial because without first setting the criteria we tend to skew our evaluation and understanding of student work. For example, we become lenient and assume understanding when we see how much effort a student exerts in solving the problem.</p>	<ol style="list-style-type: none"> 1. In a PLC or with a colleague, develop or select a formative assessment task to administer to students (item should be based on instruction that students are currently engaged in or have previously experienced in class). Curriculum resources or released PARCC test items are good sources for tasks. Think about: <ul style="list-style-type: none"> • What is the math content in the problem? • What math practices could be highlighted? • How does it connect to what students are learning in class? 2. Each member of the team should do the math problem showing how they would expect students to complete the task. 3. As a team, agree on the mathematical goals of the task. 4. Develop a rubric to be used to sort student work into piles based on evidence. <p>Following is an example of a PARCC-aligned scoring rubric.</p> <p>Level 1: Did not yet meet expectations Level 2: Partially met expectations Level 3: Approached expectations Level 4: Met expectations Level 5: Exceeded expectations</p> <p>TIP: It is easiest to agree first on Level 4, then move up and down to develop other indicators.</p> <p>A more general rubric may also be used, such as:</p> <p>Level 1: Strong Math Understanding Level 2: Incomplete Math Understanding or Misconception Level 3: Little/Not Math Understanding</p>	<p>Rich math problems aligned to CCSS-M (Open-ended tasks)</p> <p>MC² PARCC Practice Test Item Packets https://mc2.nmsu.edu/teachers/preparing-for-parcc/</p> <p>PARCC Released Items https://parcc-assessment.org/released-items/?fwp_subject_facet=mathematics</p> <p>PARCC Math Practice Tests https://parcc.pearson.com/practice-tests/math/</p> <p>PARCC Answer Keys/Rubrics https://parcc-assessment.org/answer-keys/</p> <p>Illustrative Mathematics https://www.illustrativemathematics.org/content-standards</p>



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<p>Part 3: Collaborative Reflection during PLC</p> <div style="background-color: #003366; color: white; padding: 5px; text-align: center; margin: 10px 0;"> Why reflect? </div> <p>High levels of reflection are a practice that is best fostered with colleagues. It provides a good sense of when teachers need to step back and think deeply and promotes better understanding of what is/isn't working.</p>	<ol style="list-style-type: none"> 1. Review student work and analyze different solution strategies which students used to solve the problem. 2. In a PLC, discuss what data this process/task provides. Consider what instructional strategies are needed to support students' development of Mathematical Practices and flexibility in problem solving. <ol style="list-style-type: none"> a. What do students understand? Where is the evidence in the student work? b. What were misconceptions/gaps in the students' knowledge? Where is the evidence in the student work? c. What were the instructional strategies or classroom experiences that can help move the learning forward? d. How can the protocol be used to build math confidence in students? e. How are the Common Core and Math Practice Standards advanced using the MC² Thinking Protocol as classroom warm-up problems? 	<p>Student work (Sorted based on rubric developed/selected in PLC during Part 1)</p> <p>MC² Thinking Protocol Data Collection & Analysis Tool https://mc2.nmsu.edu/teachers/5-ways-to-implement/#3</p>