Teacher Guide to Implementing MC² Thinking Protocol for Meaningful PARCC Prep

Purpose	Activity	Materials
Part 1: Preparation during Professional Learning Community (PLC) **Why a rubric?** Establishing the rubric before implementing the *Thinking Protocol* 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. **Why PARCC items?** Released PARCC sample test items are good resources to use because: • Students build confidence and competence when they have multiple experiences working on an authentic problem that is in the PARCC test format and with the rigor of PARCC test items. • This is a means for students to build problem-solving strategies in collaboration which they can apply when independently working on PARCC.	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). For meaningful test prep, add these questions to the test item: • What is the problem asking you to find? • What do you know about the problem and what steps might you take to solve it? • What questions do you have? • Explain your reasoning or thinking in solving the problem. 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. Following is an example of a PARCC-aligned **scoring rubric**. **Level 1:** Did not yet meet expectations **Level 2:** Partially met expectations **Level 3:** Approached expectations **Level 4:** Met expectations **Level 5:** Exceeded expectations **TIP:** It is easiest to agree first on Level 4, then move up and down to develop other indicators. A more general rubric may also be used, such as: **Level 1:** Strong Math Understanding **Level 2:** Incomplete Math Understanding or Misconception **Level 3:** Little/Not Math Understanding	**Rich math problems** aligned to CCSS-M (Open-ended tasks) **MC² PARCC Practice Test Item Packets** https://mc2.nmsu.edu/teachers/preparing-for-parcc/ **PARCC Released Items** https://parcc-assessment.org/released-items/?fwp_subject_facet=mathematics **PARCC Math Practice Tests** https://parcc.pearson.com/practice-tests/math/ **PARCC Answer Keys/Rubrics** https://parcc-assessment.org/answer-keys/ **Illustrative Mathematics** https://www.illustrativemathematics.org/content-standards

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Part 2: Administration of Task to Students **Why a task?** The intention of administering a task is to capture the journey of mathematical thinking and build a stronger understanding of mathematics through conversations. This takes effort and thought and doesn't always come out perfect the first time.	Set aside **at least 15-20 minutes of instructional time** for students to: 1. **Think individually (3+ Minutes)**–Have students think about the problem alone and write down their reasoning or problem-solving strategy using one of the pencils. • Think about Mathematics. • Write about what you think. 2. **Think with a partner (5+ Minutes)**–Have students share their solutions and responses to the questions above with a partner. Using a different pencil, they can change or add to their answer and/or add any new insights they learned. Remind students that no erasing is allowed. Make sure both partners have a chance to share. • Talk about what you think. Think alone first for 30 seconds about what you want to say to your partner. • Listen to what others think and try and collect ideas in your head. Paraphrase what others shared. • Think about what others shared with you. What did you hear that you may want to add to or change on your paper? No erasing, you can put a line through it. What would show your thinking about the math? • How can I make it better on my paper so that when I walk away today, the teacher still knows what you're thinking even though you're gone? 3. **Think with the class (6+ Minutes)**–Have students share different solution strategies with the whole class. Summarize and record different strategies used. Discussion questions may include: • What questions did you have about the math? • Did any of you change your mind about your first answer? 4. **Reflect on the process (1+ Minutes)**–Have students reflect using this prompt: If this was the actual test, how confident would you be about tackling the problem? • **Thumbs up** if you are totally confident and ready to take the PARCC test right now. • **Thumbs sideways** if you are almost ready and need a little more practice before taking the PARCC test. • **Thumbs down** if you are not feeling confident and we need to brainstorm ways to build your confidence. Ask students what support they need in order to move everyone's thumb to the up position. Script on a poster the supports students request in order to be confident. The intention is to use this poster(s) to influence daily instruction, to help students reflect on their journey toward confidence, and support future experiences during the *Thinking Protocol* process. 5. **Collect and sort the student work** based on the rubric developed in PLC. There is no need to score the work (alpha/ numeric/percent), only complete an initial sort.	**Copy of student task** for each student **2 pencils and/or pen** (each with different color lead/ink) for each student **For additional student reflection questions, go to the link below:** https://mc2.nmsu.edu/teachers/5-ways-to-implement/#5

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Part 3: Collaborative Reflection during PLC **Why reflect?** 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.	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. **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? Share the student-generated posters that express the supports they need in order to be confident. Create next steps for all students.	**Student work** (Sorted based on rubric developed/selected in PLC during Part 1) **MC² Thinking Protocol Data Collection & Analysis Tool** https://mc2.nmsu.edu/teachers/5-ways-to-implement/#5