Appendix G
Observing a CMP Classroom

"How do you know IT when you see IT?"
Observation Protocol for CMP Classrooms

Overview

This observation protocol is designed as a guide for teachers, coaches, administrators, and other support personnel. The protocol provides a general overview of aspects of the classroom on which to concentrate to achieve fidelity of implementation of CMP. These aspects include students' learning practices, discourse, written and oral work, and other actions.

CMP is a problem-centered curriculum that promotes an inquiry-based teaching-learning classroom environment, in which the CCSSM Standards for Mathematical Practice come alive as students pursue solutions to Problems. Implementing a coherent student-centered investigation of mathematics presents a challenge to teachers; they need support and guidance in order to engage and sustain high-level thinking with diverse groups of students.

Many classroom observations focus on the teacher. However, it is the student engagement with mathematics that enhances learning. Thus, one must focus on the learner. Observing students' engagement, through both verbal and written statements, allows for some assessment of the learning potential of a lesson as it is being enacted. Since effective teachers have unique styles for producing rich classroom environments, it is also important to examine what the teacher does to produce such an environment. Moving the mathematical learning forward should always be the main focus.

Use of the Protocol

The intent of the protocol is to inspire rich conversations among teachers, coaches, and administrators about the learning and teaching of mathematics in a productive classroom environment. The rating scale on the protocol is not meant as a way to evaluate teachers; rather, it is provided as a tool for assessing implementation.

Keeping track of every portion of the observation may present difficulties for an observer. One way to use the protocol would be to observe the lesson and record notes using a blank observation sheet, such as Appendix F. Then, while conferencing about the lesson, the teacher and colleague can use those notes to fill in this form. Another option would be to choose a few items on which to focus. So, rather than trying to keep track of all 14 items during the lesson, the observer can focus and document evidence for a few.

A lower score on a particular item may help indicate areas of focus for district or school professional development. You will find creative ways to use the protocol as you consider its benefits.

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STUDENT OBSERVATION

1. Students are engaged in important mathematical tasks.

5	4	3	2	1
Most students are engaged in mathematical tasks most of the time.		Some students are engaged in mathematical tasks; others are off task much of the time.		Few students are engaged in mathematical tasks for much of the time.

2. Students communicate using mathematical language.

5	4	3	2	1
Students use mathematical language regularly and correctly to describe and clarify.		Students occasionally use mathematical language; usage is generally correct.		Students use mathematical language in superficial ways; they rely on isolated terms or phrases.

3. Students make connections related to the goals of the lesson.

5	4	3	2	1
Students make connections within mathematics and/or other subject areas.		Teacher tends to state the connections within mathematics and/or other subject areas.		Students make no connections within mathematics and/or other subject areas.

4. Students summarize.

5	4	3	2	1
Students are involved in the process of summarizing the mathematics in a lesson.		Teacher tends to summarize the mathematics in a lesson with little student involvement.		There is no summarizing at the end of the lesson.

5. Students use elements of abstraction (i.e., symbolic representations, theory building, generalizations), if appropriate.

5	4	3	2	1
Students generalize and symbolize ideas beyond the context of the specific Problem.		Students generalize using the context of the Problem.		Students do not generalize; they focus only on specific cases within the context.

6. Students keep records.

5	4	3	2	1
Students maintain records of work (e.g., notebooks containing solution strategies, homework, glossaries) and use them as supplementary resources for learning.		Students collect records of work but do not have them available or organized for use as a resource for learning.		Students do not collect and maintain records of work in any coherent form.

7. Students reflect on their learning.

5	4	3	2	1
Students clearly articulate their current understanding of important mathematical ideas and what they are having difficulty with.		Students struggle to clearly articulate their current understanding of important mathematical ideas and what they are having difficulty with.		Students are unwilling or are unable to articulate their current understandings of important mathematical ideas and what they are having difficulty with.

8. Students participate in discourse.

	Launch	Explore	Summarize
a. ***Students use a variety of tools*** (e.g., models, drawings, tables, graphs, symbols, concrete materials) to reason about and solve problems.			
b. ***Students make conjectures and explore*** examples and counterexamples to investigate a conjecture.			
c. ***Students listen and respond*** to one another and to the teacher.			
d. ***Students question*** one another and the teacher.			
e. ***Students share and explain*** their mathematical thinking and solutions in oral or written form.			
f. ***Students try to convince themselves and others of the validity*** of a particular representation, solution, conjecture, or answer.			
g. ***Students rely on mathematical evidence and argument*** to justify validity and/or settle disagreements.			
h. ***Students initiate problems and pose new questions***.			

TEACHER OBSERVATION

9. Teacher supports students' initial engagement with the mathematics task. (LAUNCH)

5	4	3	2	1
Launch is short, focuses on the mathematical challenge. Teacher effectively connects content and context of Problem, connects to prior learning. Teacher may tell stories, relate Problem to students' lives, involve students, read the text, revisit previous ideas.		Teacher effectively communicates the content or the context but doesn't connect the two. OR Teacher does not connect to prior knowledge.		Launch does not focus on the mathematical challenge. Teacher does not effectively connect content and context of the Problem, does not connect to prior learning. Teacher reduces the challenge of the Problem by modeling how to do the Problem, "questioning away" the Problem, using too much class time.

10. Teacher supports students' exploration of the mathematics task. (EXPLORE)

5	4	3	2	1
Teacher effectively orchestrates student exploration by: observing all groups; posing questions to clarify, redirect, scaffold and/or challenge; presses students to explain their thinking. Teacher builds a sense of students' understanding.		Teacher does not consistently orchestrate students' explorations effectively. Does some of 5 and some of 1.		Teacher does not effectively orchestrate student exploration. Teacher may use time to tutor individual groups, observe few groups, tell students answers, give direction rather than pose questions.

11. Teacher supports students' summarizing. (SUMMARIZE)

5	4	3	2	1
Teacher makes strategic decisions about who presents in order to pull out the mathematics and reasoning at the heart of the Problem; uses a variety of questions to check for understanding, develop mathematical language, and push student thinking; encourages students to question each other and to help each other understand the mathematics; expects students to use mathematical evidence and argumentation to determine the validity of a solution.		Teacher has all students report with no strategic plan for orchestrating a discussion of the essential ideas of the Problem. Teacher does not create opportunities for students to engage each other about the reasonableness of approaches or correctness of solutions.		Teacher does not summarize or asks students to simply give answers, does not attempt to help students discuss the heart of the Problem, may tell students the way the problem should have been solved.

12. Teacher engages in behaviors that promote student engagement and critical thinking.

	Launch	Explore	Summarize
a. ***Teacher supports students' responsibility for listening and participating in class by:*** • not repeating directions, questions, or student comments • alerting students when it is time for whole-class work • not interrupting students' explanations			
b. ***Teacher consistently questions both correct and incorrect answers to encourage students to examine their confidence in their answers.***			
c. ***Teacher focuses students' attention on one another's explanations by:*** • asking if students agree or disagree with another's reasoning and why • having a student restate another's statement • asking if a student's response seems reasonable			
d. ***Teacher focuses students' attention on connections within mathematics and/or other subject areas by asking:*** • if the current content reminds them of things they have done before • how two strategies may be mathematically alike or different • whether there is a relationship between two students' ways of thinking about a problem			
e. ***Teacher pushes students to clarify and/or expand their thinking by asking students:*** • to explain what they know about the situation so far • to tell more about how they think about an idea • to consider another example to check for understanding or to go further			

TECHNOLOGY OBSERVATION

The use of technology does not necessarily imply that students are learning. However, it is important to have conversations about the kinds of technology that best support students' mathematical understanding and about the strategic use of such technology.

13. Students use technology (when appropriate).

5	4	3	2	1
Students use technology to enhance mathematical understandings.		Technology is used but does not further the mathematical understanding.		Use of technology limits or impedes learning.

14. Teacher uses technology (when appropriate).

5	4	3	2	1
Teacher effectively uses technology to support the learning of mathematical ideas.		Technology is used but does not further the mathematical understanding.		Use of technology limits or impedes instruction.