



Observing and Discussing Mathematics: A Guide to Powerful Instruction

“How to” Use the Guide for Observing and Discussing Mathematics

Select a scope, focus and timeframe for the discussion and/or observations:

<u>Scope</u>	<u>Focus</u>	<u>Timeframe</u>
Teacher(s)	One Goal	Chapter/Unit
School	Multiple Goals	Quarter
District		Year

Examples:

- All second grade teachers in the district focus on Goal 2 -- Balanced Instruction for one unit of instruction
- All principals in the district focus on Goal 3 -- Frequent Assessment for Differentiated Instruction for one quarter
- One teacher selects 2 students at different levels of mathematical understanding and addresses a set of questions about those two students, such as:
 - How well is each student learning the current math unit?
 - How do you know? How do your assessments help to plan next steps for instruction?
 - How is the learning the same or different for each student?
 - How has your professional development enhanced your ability to teach this mathematics strand?

Review the standards for the grade level to be visited. If possible, have a pre-observation conference.

The questions can easily be modified for a principal-superintendent conference or walk through. Asking, “Tell me more” and “How do you know?” may extend each question and help to establish a research-based disposition. This model can be used to support walk through protocol.



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Compact Goals	Goals for Teachers Framework	Observation Sample Questions	Conference Sample Questions
<i>Highly Qualified Teacher</i>	1. Increase teachers' knowledge of mathematics content through professional development focusing on standards-based mathematics.	What changes have you implemented to strengthen standards-based learning as a result of professional development?	What mathematics professional development have you participated in during the past year or two? Give examples of how that professional development changed or enhanced your instructional practice to support student learning of standards.
<i>Rigorous Curriculum</i>	2. Provide an instructional program that preserves the balance of computational and procedural skills, conceptual understanding and problem solving.	What evidence is there that the instructional program and the learning environment incorporate all three types of knowledge? (Procedural skills, conceptual understanding and problem solving)	Think of a particular strand of mathematics and of an individual student or instructional group. How has each of the three types of knowledge included? (Procedural skills, conceptual understanding and problem solving)
	3. Assess student progress frequently toward the achievement of the mathematics standards and adjust instruction accordingly.	In what ways do students frequently demonstrate their understanding using a variety of means, such as models, drawings, symbols and or presentations? How do teachers differentiate the instruction consistently based on on-going assessment of student understanding?	What types of assessments are used to understand student progress during this instructional unit? How is the instructional program differentiated according to student need?

	<p>4. Provide learning in each instructional year that lays the necessary groundwork for success in subsequent grades or subsequent mathematics courses.</p>	<p>What connections are included in the learning activities designed to build upon students' prior knowledge? Is the mathematics of the lesson/unit important for learning the standards for the current year? What connections are built into the learning activities that provide the mathematical foundation for the standards for next year?</p>	<p>How does this instructional unit build upon the learning from last year? How does this instructional unit provide foundational learning for the standards next year while maintaining appropriateness for the current needs of students?</p>
	<p>5. Create and maintain a classroom environment that fosters a genuine understanding and confidence in all students that through hard work and sustained effort, they can achieve or exceed the mathematics standards.</p>	<p>How are the learning activities scaffolded to build student understanding and confidence? In what variety of ways are all students encouraged to solve problems requiring sustained effort?</p>	<p>Give an example of a challenging problem or topic that a student has worked on over time. What strategies can students employ if they are having difficulty with a problem (ask a teacher, ask a peer, use math resource, etc.)?</p>
	<p>6. Offer all students a challenging learning experience that will help to maximize their individual achievement and provide meaningful opportunities for students to exceed the standards.</p>	<p>Do all students have opportunities for extended learning and application of learning? Are all students engaged with learning activities in a meaningful way?</p>	<p>Select three students at different mathematical levels. Determine what each student knew about this topic before instruction began and what has each student learned during the unit? Does each student have a deeper level of conceptual understanding and a greater capability to successfully complete procedural activities?</p>

Increased Time	7. Offer alternative instructional suggestions and strategies that address the specific needs of California's diverse student population.	What varieties of instructional strategies are being used within the learning environment? How are students grouped for learning, and then regrouped?	How is the mathematics program being differentiated to meet individual student needs? (Time, learning style, assessment modality, etc.) How do you know what each student actually needs?
Share Promising Practices	8. Identify the most successful and efficient approaches within a particular classroom so that learning is maximized.	Is student work demonstrated, displayed, and respected in the classroom environment? Are student strategies shared within the classroom? In what variety of ways do teachers share successful practices with each other?	Give an example of a unit or strategy that was successful. How do you know it was successful? What made it successful? Can those elements be translated to other learning situations? How are successful strategies shared school-wide?

References

CAHSEE Compact, San Diego County Achievement Gap Task Force, San Diego County Office of Education, 2003

Content Standards for California Public Schools Kindergarten Through Grade Twelve, Mathematics
<http://www.cde.ca.gov/standards/>

Mathematics Framework for California Public Schools, Kindergarten Through Grade Twelve, Revised Edition, California Department of Education, 2000

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