OBSERVATION GUIDE

The Silicon Valley Mathematics Initiative (SMVI) Observation Guide is a two-pronged tool used by coaches drawing heavily on the vision of mathematics teaching portrayed in the SVMI mathematics teacher's rubric. The guide can be used both to help focus classroom observations and as a discussion guide to help focus pre- and post- conferences between teacher and coach.

The questions in the guide are divided into 3 categories: mathematics/content knowledge, learning/pedagogy, and environment/creating a culture. For each of these categories there are questions about what students are thinking and doing on one side and questions about what the teacher is thinking and doing on the other side of the guide. It is not meant to be used as a checklist. The questions are meant to help the coach (and teacher) think about good mathematics teaching through observation of practice. During any one observation cycle (pre-conference, observation, post-conference) the focus will most likely be on only one of these categories. And, although the coach may collect evidence about all the questions in a category, he or she may choose to discuss a more limited number of them during the post-conference.

CLASSROOM OBSERVATIONS

Mathematics coaches are encouraged to focus their classroom observations on *what the students are doing,* rather than on what the teacher is doing. This guide helps the coach to focus on students' thinking, their ideas, understandings, misconceptions and their work during classroom observations. It asks the coach to look for and record evidence of how students are making sense of the mathematics, what processes they are using, how they reason, and what approach they use to attack and/or solve problems. It also asks coaches to look for what misconceptions students hold and where those misconceptions originate. Additionally it helps the coach to focus on how students interact with each other. Do they effectively communicate and listen to each other and use each other as resources? Are all students involved and active in the tasks? When students seek authority over whether a solution is correct, do they rely on others, do they ask the teacher, or can they reason for themselves using their knowledge of mathematics and logic? Are all students engaged and do they take risks and share? The coach then uses this information as the basis for discussion with the teacher during the post-conference.

A DISCUSSION GUIDE

The focus on student thinking and student work sets the stage for a dialogue between the teacher and coach that promotes effective mathematics instruction. During the pre-conference the coach might work with the teacher to decide on which category they should focus. The coach might want to show the teacher the particular questions he or she will be focusing on during the classroom observation or the coach and teacher might use the questions as a guide to planning the lesson that will be observed. It is also possible that the coach may not directly ask the questions in the guide but use them to assess the teacher's thinking about the lesson he or she will be teaching. During the post-conference the coach may report what he or she saw students doing during the lesson or the teacher and coach may examine student work products. The coach uses the findings and data collection from the observation or from the student work to initiate a discussion with the teacher. Sharing the collected data with the teacher often provokes the teacher to ask questions or seek to answers about certain instructional strategies, worthwhile tasks, teacher moves, content knowledge and/or techniques for establishing a more student-centered classroom environment.

GUIDE TO FOCUS CLASSROOM OBSERVATION

Student	Teacher
Mathematics What is the core mathematics the students are engaged in?	**Content Knowledge** What does the teacher believe is the core mathematics of the lesson?
What ideas do the task and work of the students address?	How has the teacher constructed the lesson to address these ideas?
How are students experiencing the mathematical ideas?	What experiences/mediums are used to teach the idea?
Are students grasping the conceptual understandings of the mathematics?	How does the teacher assess students' understanding?
Is there depth in the activities students are engaged in?	How is the mathematics extended/adjusted for students own learning demands?
What kinds of mathematical thinking are students involved in (procedural, conceptual, problem solving, justification)?	What does the teacher understand about the development of students' ideas about the mathematics?

Student	Teacher
Learning How are students using mathematical reasoning? What connections are students making? What understandings are they demonstrating? What misconception are they holding? What may be the roots of misunderstandings? What are the results of these misunderstandings? What conjectures have students made? What justifications are students sharing?	**Pedagogy** How does the teacher use the reasoning of students? How does the teacher facilitate/encourage student-connections? How is the teacher assessing student understandings? Is the teacher focused on misunderstandings held by students? What productive ways is the teacher using student confusion? What adjustments are made as a result of student thinking? How is higher-level reasoning supported in the class? How is proof and justification facilitated and encouraged?

Student	Teacher
Environment How well do students talk with each other? How well do students listen to each other? How do students support each other in the classroom? Where does the authority of the mathematics reside in the class? What learning styles do students use to make sense of the mathematics? How do students access materials, tools and equipment? How are ideas respected/dismissed in class? Are students willing to take risks? Are all students engaged in the mathematics?	**Creating a Culture** What does the teacher do to support student centered thinking? In what ways does the teacher support respect for student ideas? Does the teacher encourage students to use others as resources? Does the teacher make mathematics reasoning the authority is class? How does the teacher support various learning styles and needs? How does the teacher manage materials, supplies and equipment? How does the teacher facilitate ideas as the currency of learning? How does the teacher promote risk taking/use errors effectively? What interventions are used to maintain engagement and success?

Discussion Guide

Student	Teacher
Mathematics	**Content Knowledge**
What is the core mathematics the students are engaged in?	What does the teacher believe is the core mathematics of the lesson?
What ideas do the task and work of the students address?	How has the teacher constructed the lesson to address these ideas?
How are students experiencing the mathematical ideas?	What experiences/mediums are used to teach the idea?
Are students grasping the conceptual understandings of the mathematics?	How does the teacher assess students' understanding?
Is there depth in the activities students are engaged in?	How is the mathematics extended/adjusted for students own learning demands?
What kinds of mathematical thinking are students involved in (procedural, conceptual, problem solving, justification)?	What does the teacher understand about the development of students' ideas about the mathematics?

Student	Teacher
Learning	**Pedagogy**
How are students using mathematical reasoning?	How does the teacher use the reasoning of students?
What connections are students making?	How does the teacher facilitate/encourage student-connections?
What understandings are they demonstrating?	How is the teacher assessing student understandings?
What misconception are they holding?	Is the teacher focused on misunderstandings held by students?
What may be the roots of misunderstandings?	What productive ways is the teacher using student confusion?
What are the results of these misunderstandings?	What adjustments are made as a result of student thinking?
What conjectures have students made?	How is higher-level reasoning supported in the class?
What justifications are students sharing?	How is proof and justification facilitated and encouraged?

Students	Teacher
Environment How well do students talk with each other? How well do students listen to each other? How do students support each other in the classroom? Where does the authority of the mathematics reside in the class? What learning styles do students use to make sense of the mathematics? How do students access materials, tools and equipment? How are ideas respected/dismissed in class? Are students willing to take risks? Are all students engaged in the mathematics?	**Creating a Culture** What does the teacher do to support student centered thinking? In what ways does the teacher support respect for student ideas? Does the teacher encourage students to use others as resources? Does the teacher make mathematics reasoning the authority is class? How does the teacher support various learning styles and needs? How does the teacher manage materials, supplies and equipment? How does the teacher facilitate ideas as the currency of learning? How does the teacher promote risk taking/use errors effectively? What interventions are used to maintain engagement and success?