FRANKLIN MCKINLEY/SJSU MATHEMATICS INITIATIVE

MEETING 3: APRIL 5, 2016 Instructional Team Training

FM District Office 3:30 – 5:30

Session Outcomes:

- Learn Problem of Practice (POP) process and protocol
- Work in groups to analyze student work on fractions and state a POP
- Explore fractions with tangrams
- Learn Master Designer and group norms for explaining and questioning
- Become acquainted with the MARS task website and CAASPP online resources

Facilitators

- Joanne Rossi Becker
- Cheryl Roddick
- Patty Swanson
- Margaret Bonanno

Norms

- Smart technology-free zone (closed laptops)
- Cellphones on vibrate
- Active listening
- Active participation

MEETING 3 AGENDA

1. The Problems of Practice Process (Margaret and Patty)	10 min
2. Grade Level Analysis of Student Work Grades 3 & 4 Patty & Margaret Grade 5 Cheryl Grade 6 Joanne	50 min
3. Tangram Areas with Fractions (Patty)	20 min
4. Master Designer: Teaching Group Norms and Language (Patty)	30 min
5. Using the MARS Website and CAASPP Online Resources (Joanne)	5 min
6. Logistics, Online Survey (Margaret)	5 min

Homework!!

Read Brent Duckor's article on Formative Assesment (binder)

Question to think about: Of the FA moves, which one are you most interested in and would like to work on this year with us?

Franklin-McKinley/
SJSU Math
Institute
April 5, 2016

Today's Agenda

- Beginning the Problems of Practice (POP) Process
- Grade Level Analysis of Student Work and Next Steps
- Share Out by Grade Level
- Tangram Areas with Fractions
- Master Designer: Teaching Group Norms
- MARS Site Access / CAASPP RESOURCES
- Survey, Paperwork and Logistics

Problems of Practice Questions

What do we want our students to learn?

How will we know if **each student** has learned it?

What will we do when some students do not learn it?

How will we extend and enrich the learning for students who demonstrate proficiency?

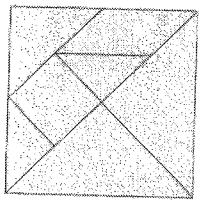
Examine Student Work

- Each person share student work
  - Why did you choose this work?
  - Is there a strategy that would be helpful for all students to see?
  - Is there a common error or misconception to be addressed?
  - How might the work be used to further student learning?
- Person born furthest from FMDO will be facilitator; person born closest will be reporter for the group.

Whole Group Sharing

- Pick one sample of student work to share with the whole group
- Briefly identify the misconception in the student work and how you decided to address it

Tangram Areas with Fractions



7 tangram shapes

Intersecting Math and Cooperative Norm Objectives

Master Designer

- Describe location and movement of 2-dimensional shapes using precise academic language (i.e. triangle, square, parallelogram, congruent, slide, rotate...or the fraction names of the pieces)
- Explain patiently, using a variety of strategies to assist the learner.
- Ask questions, seek help strategically.

Access to MARS items

- Go to svmimac.org
- Click "member resources"
- Click "MARS"
- Access
  - Login – svmimember2; password – 20even
  - For specific files: 2016 exams – mac18
  - Prior to 2016 – sweet16

CAASPP Websites

- http://www.cde.ca.gov/ta/tg/sa/practicetest.asp
- http://www.caaspp.org/ta-resources/practice-training.html

Survey, Paperwork & Logistics

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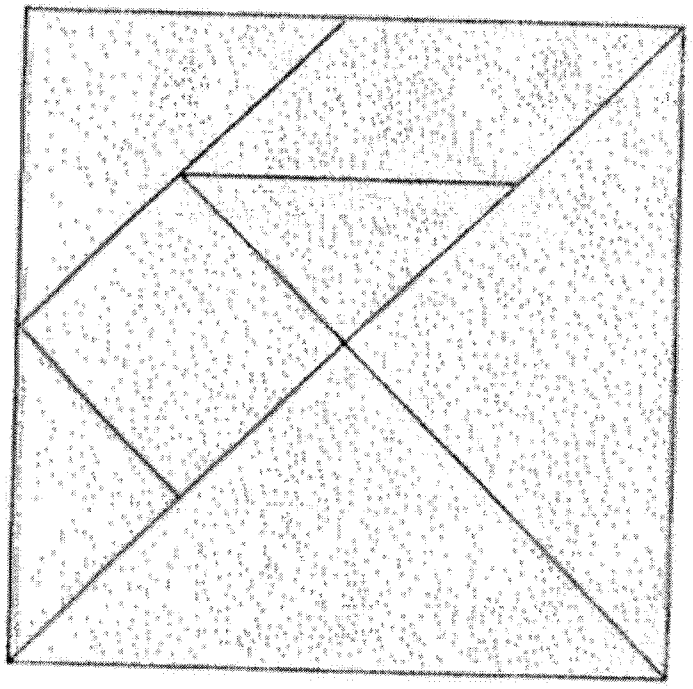

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Assignment for May 10

- Read Brent Duckor's article on Formative Assesment (in binder from March session)

- Question to think about: Of the FA moves, which one are you most interested in and would like to work on this year with us?

Survey, Paperwork & Logistics

Professional Rounds

Identifying a "Problem of Practice"

A combination of data and dialogue is used to identify an instructional issue. If students are not being successful in an area, what could we do differently as professionals to ensure that each student is successful and that our time is spent more effectively? A Problem of Practice should be the focus of staff attention. Teachers will need training and continued support to address a meaningful Problem of Practice. It is something staff genuinely doesn't know how to do and is trying to learn more about and get better at. A rich Problem of Practice:

- focuses on the instructional core (What teachers and students are doing and the content being addressed).
- is directly observable.
- is actionable (is within the school's/district's control and can be improved in real time).
- connects to a broader strategy of improvement (school, feeder pattern, system).
- is high-leverage (if acted on, it would make a significant difference for student learning).
- is deep learning (e.g., higher levels on Bloom's) promoted by this POP for both teachers and students?

In short, the problem of practice is something that you care about that would make a difference for student learning if you improved it.

Some general considerations to think about when identifying this "problem of practice" include the following:

1. What does data (both qualitative and quantitative) tell us?
2. What is there that, if done by everyone, could serve as an umbrella for a number of the teaching and learning strategies we have in our school plan?
3. What can have the most positive effect on what students do, what teachers do and the quality of the work that students are producing?
4. Is what we are considering as a "problem of practice" something that we can control?
5. Is what we are considering observable?
6. Is the "problem of practice" we are considering supportive of other school and district efforts?

The statement of the Problem of Practice should be a description of an issue--a few sentences describing what is happening that is problematic. A brief generalization about the data that led the team to the specific issue it chose is an appropriate introduction. The focus questions are generated after the POP has been determined and described. These

questions will likely be revised as the staff gains insight about their issue (from professional development and early implementation actions etc). The questions provide guidance to observers on what they should be seeing as a result of staff successfully addressing the POP. They have been included here primarily to emphasize the fact that addressing a Problem of Practice involves all three components of the instructional core: what the teacher is doing, what the students are doing, and the content. Your staff's initial focus questions should be part of your building's Problem of Practice statement even though your questions will likely change as you and your staff begins addressing your POP.

Sample Problems of Practice

1. **High Expectations**. Achievement data indicates our students are generally not performing at the level needed to meet state standards. Data from our CRTs and walkthroughs indicate that students are held to different expectations in different settings and, at times, the expectations are too low. Teachers are unsure of what students are capable of. Teachers fear that if they set their expectations too high, students will be frustrated by the challenge. The staff has decided to learn ways to build scaffolding activities into their lessons so students get the support they need to meet higher expectations. Focus Questions: What evidence of high expectations for all students do you see in the kinds of tasks students are asked to do and in the work they produce? Do you see evidence of high expectations in student participation in the lesson? What is the teacher doing that sends a message of both high expectations and student support promoting academic achievement for all students?
2. **Student Engagement**. We have hypothesized that the root cause of our below state standards student achievement is that a lack of student engagement is inhibiting student learning. Engagement varies greatly between classes and among students, but the building has large numbers of students demonstrating a disconnection to class work. Teachers fear that making the lessons "fun," would cause them to dilute their expectations for achievement. Teachers are seeking training and support to improve their success at engaging students and meeting high academic standards. Focus Questions: What level of productive engagement do you see between the students and the tasks they have been given? Do some tasks appear to generate greater student engagement than others? Among students, who seems engaged, bored, lost, discouraged or disinterested? How do you see teachers promoting student engagement during the lesson?
3. **Building a community of learners by focusing on productive student group work.** Low student achievement across content areas and lack of student interest in learning suggest that we need to investigate different instructional approaches. The staff is aware of research on the effectiveness of students working in groups, both on achievement and attitude toward learning, especially in urban settings. The staff has found that its efforts to design and implement projects involving students working together have resulted in chaos and little productive learning. The staff is struggling with how to design and implement productive lessons which are focused on students working collaboratively to achieve high levels of successful learning. Focus Questions: How are groups working? Are students helping each other learn? Is learning a mutual endeavor in groups? What level of significant learning do you see for both groups and individuals? How do the assignments support effective group learning? What teacher behaviors support productive group learning?
4. **Increasing the variety of teaching strategies used in classrooms.** Our test data indicate a need to change our instructional methods in order to be more successful with the

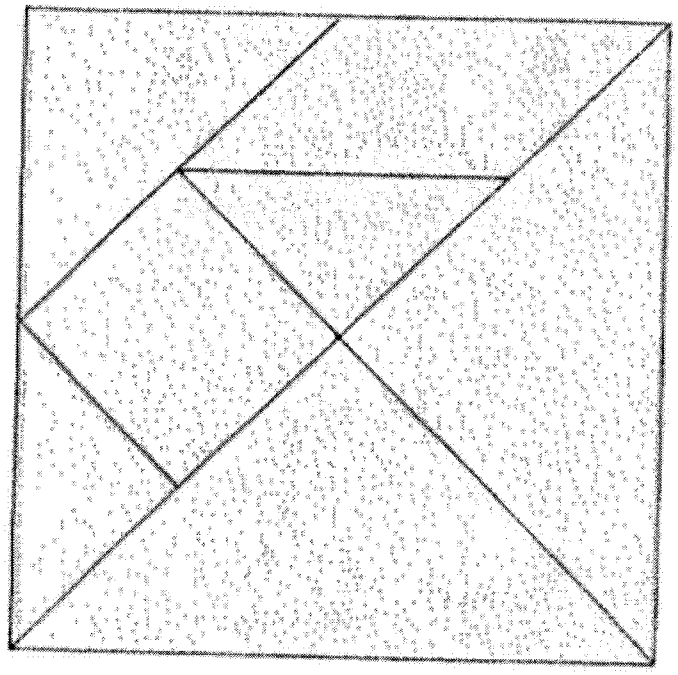
students we serve. Although teachers make an effort to make their classes interesting to students, the overwhelming majority of classes are teacher-centered and dependent upon worksheets. Teachers have felt the need to concentrate on this kind of instruction because of classroom management issues. We are struggling as a staff to incorporate a greater variety of teaching strategies without losing control of our classrooms. Focus Questions: What evidence do you see that teachers are using a variety of strategies to make content concepts clear (that is modeling, using visuals, differentiating instruction, providing hands-on activities, using body language and gestures, using or providing for students the use of native languages, structured use of classroom assistants)? Is there variety in the nature of work students are asked to do? Are students responding positively to the variety of strategies and, consequently, learning more?

5. **Encouraging and scaffolding student thinking.** Students have been acclimated to expect to do only low level thinking and work as defined in Bloom's taxonomy. Although staff is convinced of the need to increase rigor, students are easily frustrated and quickly give up. The staff is struggling with ways to provide the kind of scaffolding to students that will increase their sense of efficacy and result in their exhibiting perseverance in pursuing higher order tasks and answering questions involving higher order thinking. Focus Questions: What is the task that students have been given? What have students been asked to do that will result in thinking and learning? What, if any, probing questions do teachers ask to push, stretch and support student thinking?
6. **Equitable distribution of questions and student work across Bloom's taxonomy.** Our test results indicate that students do not perform well on questions beyond simple recall. Walkthroughs have provided evidence that the focus of teacher questioning is overwhelmingly at the knowledge level of Bloom's taxonomy. The staff is interested in becoming more competent at constructing meaningful higher order questions as well as increasing the frequency of use of such questions. Focus Questions: What evidence do you see of the use of all levels of Bloom's taxonomy in questions and student work? Are students being given questions or work that causes them to work and think at all these levels? Are teachers ensuring that all students are answering these questions?
7. **Increasing rigor in classrooms and supporting students in achieving higher levels of rigorous work.** Our building test data indicates that our students are not achieving at the same levels nor progressing as much each year as the average student in the state. An analysis of the work we provide to our students has indicated that it is not as rigorous as state standards demand; however, we have found it difficult to increase our demands on students without putting them at risk of failure. As a staff, we are struggling to successfully increase the rigor in our classrooms while providing the support to students needed for them to be successful. To gain more implementation ideas, we are planning to participate in a variety of professional development activities focused on creating rigorous work for students while also promoting student engagement. Focus Questions: What examples of rigor do you see in the work students are being given to do? Do you see students being pushed so that the work is challenging but doable. In other words, are students being stretched and forced to use their brains to problem solve and do high level work? Do you see examples of scaffolding being used by teachers to enable all students to meet the rigor requirements?
8. **Relevance of school work.** Students do not perform well on the state achievement tests and appear bored and disconnected in our classrooms despite our best attempts to provide quality instruction. In student surveys, there is a significant majority of our students who claim that the material taught in our classrooms has no connection to their out-of-school lives. As a staff, we struggle to find ways to make the material in the state standards relevant to our students. We have committed ourselves to creating lessons more relevant to our students by using activities/tasks that connect to students' cultural lives, the world

of work, and everyday problem solving to engage more of our students. Focus Questions: How is the work being made relevant to all students? How do teachers connect the work to students' prior knowledge and experiences? Does it appear to be clear to students how the work or task is or will be relevant to their daily and future lives?

For further information, see:
City, Elizabeth A., Elmore, Richard F., Fiarman, Sarah E, and Teitel, Lee, **Instructional Rounds in Education: A Network Approach to Improving Teaching and Learning**, Harvard Education Press, Spring, 2009

Tangram Areas with Fractions



7 tangram shapes

Intersecting Math and Cooperative Norm Objectives

MASTER DESIGNER

- Describe location and movement of 2-dimensional shapes using precise academic language (i.e. triangle, square, parallelogram congruent, slide, rotate...or the fraction names of the pieces)

- Explain patiently, using a variety of strategies to assist the learner.

- Ask questions, seek help strategically.

Tangram Areas with Fractions

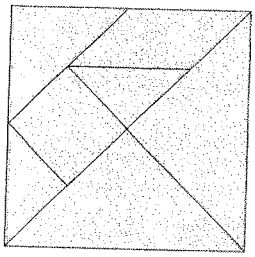
Introduction - Pose a simpler problem

Show the square in relation to the 2 small triangles.

If the area of the square is one-whole, what fraction name would we give each of the small triangles? Why?

Exploration

Show students how to use all 7 of their tangram pieces to make a larger square.

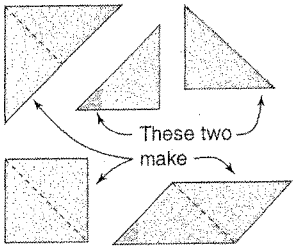


7 tangram shapes

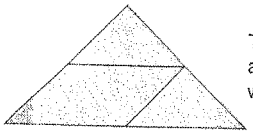
If the area of the square is one-whole, what fraction name would you give each of the tangram pieces?

Think by yourself for a few minutes to generate ideas, then go ahead and work on the task as a group. There are many different ways to solve this puzzle. Be sure each group member could share a strategy for solving the problem during wrap-up.

Students may note...



The two small triangles make each of the medium shapes.



Two small triangles with any of the medium pieces will make the large triangle.

Wrap-up

Using the document camera, ask groups to show how they solved the problem. After the first group reports ask, *"Who did it a different way?"*

When groups have shared highlight key concepts and strategies.

MASTER DESIGNER

RULES

1. Each player creates his or her own copy of the MD's design.
2. Players ask the MD questions.
3. The MD may <u>explain</u> with words and sign language.
4. No looking at others' designs.
5. Solvers help the MD <u>explain</u> to others.

NEW BEHAVIORS

EXPLAIN BY *TELLING HOW*
*** ASK QUESTIONS ***
HELPING STUDENTS DO THINGS *FOR THEMSELVES*
* * *
***EVERYBODY* HELPS**

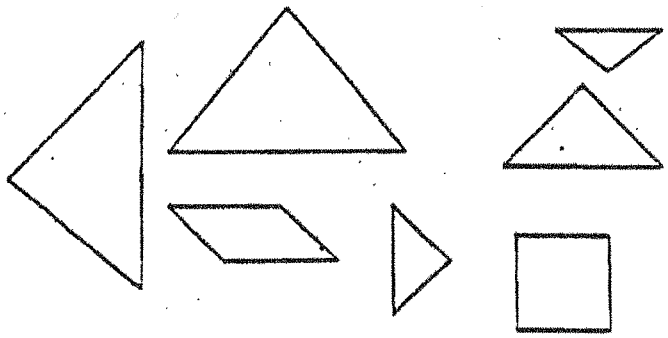
MASTER DESIGNER

MATERIALS:

This exercise requires a set of 7 geometric shapes. These are identical with commercially available Tangram shapes. Each player needs a complete set, but one person in each group takes the role of observer and does not require a set. A total of five persons per group is recommended, but smaller groups are acceptable. The shapes should be made out of some sturdy material such as oaktag. The exact size of these shapes is given in Figure A.2.

In addition, you will need some cardboard or other dividers that can be stood on a table. Two manilla folders per student works well. The idea is that each player can see the other members of the group over the divider, but cannot see what the others are doing with their pieces.

Figure A.2: "Master Designer" Shapes



RULES AND DISCUSSION

One person plays the role of master designer. This person has to instruct the other players as to how to replicate a design he or she has created with pieces (all or part of them) but the master designer cannot do this task for them. Players cannot see what the others are doing, nor can they see the design of the master. However, group members may ask questions of the master designer. This illustrates an important new behavior:

HELPING STUDENTS DO THINGS FOR THEMSELVES.

The group is dependent on the master designer for explaining how it should be done. This is the second new behavior:

EXPLAIN BY TELLING HOW.

In addition to verbal directions, students may use sign language to demonstrate to each other. This will help bridge any language differences you may have in your class.

When any member of the group feels that he or she has figured out the master design, the designer is asked to check the solution. If the master designer says it is correct, then that player too is to help others in the group by explaining how. This rule illustrates another important new behavior:

EVERYBODY HELPS.

Make up a bright chart with these three behaviors and display it prominently in the classroom.

After everyone in the group has completed the correct design, another student can take the role of the master designer. If you do not have time for everyone to take a turn, pick a variety of students to play this role -- not just the natural leaders.

One student plays the role of observer for each round. The observer watches the group and checks off every time he or she sees two of the new behaviors occur. These are:

Explain by telling how

Everybody helps

Also make up a simple scoring sheet so the observer can check off new behaviors every time he or she sees them.

Since this is the first time students have ever been asked to observe, you will need to discuss how a person would know that a student is "telling how: or whether or not other members than the master designer are helping. You might want to run through a simple design first with yourself as master designer. Then have students role-play "telling how" and "helping others". It is not so important that the observer correctly record every time the behavior happens. The fact that someone is watching for and checking off behaviors helps to objectify behavior, and will assist the whole group in recognizing such behaviors when they occur.

After each game ask each observer to report how many times he or she saw each new behavior. The observer may be able to give some good examples of what was seen. This provides an opportunity for the teacher to reinforce the new behaviors. Follow this with a discussion similar to the one described in detail for Broken Circles or Squares. Discuss how these behaviors will be useful for the curriculum. Explain that everyone will have to do his or her own report, so it will be important that everyone comes to understand and do things for themselves.

TANGRAM MASTER SHEET