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### **Davida Fischman TSSA Spring 2008**

Davida Fischman

CSUSB, [fischman@csusb.edu](mailto:fischman@csusb.edu)

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Spring 2008 Teaching Skills Study Award Report  
**Davida Fischman, Department of Mathematics**  
Attendance at the Annual Conferences of the  
**National Council of Teachers of Mathematics (NCTM) and**  
**National Council of Supervisors of Mathematics (NCSM)**  
April 6-12, 2008, Salt Lake City, UT

In these conferences I attended a wide variety of sessions, on a topics including:

**Changing from a teacher-centered classroom to a student-centered classroom.**

Several presentations involved this concept. In one of them, Steven Reinhart discussed the power of small changes made consistently over time, and ways in which we can change our focus from “What have I explained/taught/presented in class today?” to “What have my students learned today?” His suggestions (collected from many sources) focus on questioning and range from the simple to the profound, and include such practices as:

1. Never say anything a student can say! Ask questions rather than give answers.
2. Ask good questions: prepare them in advance with the goal of having students think and reflect, rather than recall or reproduce.
3. Use more “process” questions (which require thought to answer) than “product” questions (which frequently have a one-word answer.)
4. Replace lectures with sets of questions.
5. Be patient – wait for a large proportion of your students to process the question and don’t let the first student with his/her hand up answer immediately.

**Differentiated Instruction**

At every grade level we encounter the problem of a classroom full of students at very different levels of understanding and skills. One of the best presentations provided multiple strategies to turn this problem into an asset. Dr. Mariann Small argued for more open-ended problems that give students choice in how they respond. For example:

1. *The answer is 12. What was the question?*

Some of the questions might be:

What is 4 times 3?

What is 5 plus 7?

What is the smallest positive integer that has both 6 and 4 as factors?

2. *Fill in the blanks in as many ways as you can: 72 is \_\_\_\_% of \_\_\_\_.*

Some answers might be:

72 is 100% of 72.

72 is 50% of 144.

72 is 600% of 12.

3. *Use these numbers and words to make a true sentence: 10, 50%, twice, difference.*

The **difference** between **10** and **50%** of 80 is **twice** as much as 15.

The **difference** between **50%** of **10** and **twice** as much as 6 is that one is odd and the other is even.

The **difference** between **twice** as much as **50%** of 90 and 100 is **10**.

Students can answer these questions individually or in groups. This can be made into a contest – who can write the most questions for this answer? However these activities are structured, each student can provide an answer. Over time the students who are experiencing success at a lower level will have the opportunity and motivation to make progress and learn more so they can give the more sophisticated answers.