MTI Update

SPRING MTI SCHEDULE

The MTI spring course schedule will be posted on the Idaho State Department of Education MTI website on Monday, October 17th. Registration will begin at 8:00 a.m. (7:00 a.m. PST) on Tuesday, November 1st.

The MTI page on the SDE website is www.sde.idaho.gov/site/math/mti.htm

Please pass this information along to teachers and administrators in your district that need to take the course. It is advantageous for a person to sign-up for the same class as other individuals from the same school.

Thank you!

INITIATIVE FOR DEVELOPING MATHEMATICAL THINKING OFFICE AT BOISE STATE UNIVERSITY

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ENCOURAGE MULTIPLE STRATEGIES & MODELS

Using multiple strategies and models to build students’ mathematical understanding can take many forms in terms of instructional practices used in the classroom. This section focuses on a possible instructional method for developing students’ understanding of multiple strategies and models. It also focuses on increasing students’ ability to generalize and make conjectures about a particular operation.

When various models and strategies are being used in the classroom it is important that students (1) understand and can reason about the various models and (2) can recognize the mathematical structure embedded in the models. However, asking each student to model one problem multiple ways can often lead to frustrating results for the teacher and misconceptions by the students.

The purpose of familiarizing students’ with multiple models is to build number sense and place value understanding and also to give them the skill set to choose efficient models based on the particular numbers provided. The following problems are examples of tasks that could be provided to students to encourage them to think flexibly about models while providing them the scaffolding they may need to access and understand the various models.

Solve the problem \( 57 - 29 \): How do each of the following models work? Will they always work? Which one is easiest? Why?

\[
\begin{align*}
57 & \rightarrow 37 - 7 \rightarrow 30 - 2 \rightarrow 28 \\
57 - 29 & = 28
\end{align*}
\]

A hiking group is organizing a field trip, they estimate it will take 8 hours to walk 12 miles. Ellie wants to know how far the group will go if they hike for 42 hours.

How are the models similar or different? How does each one work? Which one is most efficient?
The Common Core State Standards for Mathematics were adopted by the Idaho State legislature in January of 2011. A timeline regarding implementation of these new standards can be found on the State Department of Education website:

http://www.sde.idaho.gov/site/common/

- 2013-2014 – Common Core State Standards will be taught in Idaho
- 2014-2015 – New Assessments based on the Common Core State Standards will be delivered

These new standards are a significant departure in focus, content, and structure from the previous Idaho Content Standards and many mathematics textbooks. The following table provides a brief comparison of the current Idaho Content Standards for Mathematics, the new CCSS for Mathematics and the potential models called for by those standards documents. The purpose is to provide a comparison of the two documents in terms of analyzing the mathematical models to be used at each grade. It could also be used to begin vertical collaboration conversations around the content and instruction of the new standards.

<table>
<thead>
<tr>
<th>2nd Grade</th>
<th>3rd Grade</th>
<th>4th Grade</th>
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<tbody>
<tr>
<td><strong>Current Idaho SS Models</strong></td>
<td><strong>Common Core SS Models</strong></td>
<td><strong>Problem:</strong> Starting at 120, how do you get to 342 using hundreds, tens and one? <strong>Potential Models for instruction:</strong> Base ten blocks, number line, etc.</td>
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<td><strong>2.M.1.2.2</strong> Add whole numbers with and without regrouping through 99. <strong>Problem:</strong> 48 + 39</td>
<td><strong>2.NBT.7</strong> Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. <strong>Potential Models for instruction:</strong> Base ten blocks, number line, etc.</td>
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<tr>
<td><strong>3.M.1.2.2</strong> Add and subtract whole numbers with and without regrouping through 999 <strong>Problem:</strong> 482 + 398</td>
<td><strong>3.NBT.2</strong> Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. <strong>Problem:</strong> 482 + 398 <strong>Potential Models for instruction:</strong> Base ten blocks, number line, arrow language, tree diagram, partial sums, etc.</td>
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<td><strong>4.M.1.2.2</strong> Add and subtract whole numbers <strong>Problem:</strong> 4859 + 6587</td>
<td><strong>4.NBT.4</strong> Fluently add and subtract multi-digit whole numbers using the standard algorithm. <strong>Problem:</strong> 4859 + 6587 <strong>Potential Models for instruction:</strong> Number line, arrow language, tree diagram, partial sums, traditional algorithm, etc.</td>
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ABOUT MTI WORKSHOPS

The MTI follow up workshops are available to districts, schools and teachers who are interested in implementing the ideas and information from the MTI course. A district or school can contact the Regional Math Specialist who offers the workshop to make arrangements for it to be held in their school/district. These can be held after school or during a district or school in-service time. If a school or district requests a workshop, we ask that they guarantee that a minimum of 15 people will be in attendance from their school/district. These can be held after school or during a district or school in-service time. If a school or district requests a workshop, we ask that they guarantee that a minimum of 15 people will be in attendance from their school/district.

REGION III/IV WORKSHOPS

Workshop registration open to all Region 3 teachers who have completed a MTI course

Number & Numeration (Grades K-2)
Instructor: sarahreynolds@boisestate.edu
November 16th, 3:30—5:30 p.m.
West Canyon, Vallivue

Addition/Subtraction Progression (Grades 3-5)
Instructor: jacquelynismail@boisestate.edu
November 30th, 3:30—5:30
West Canyon, Vallivue

Meaningful Assessment (Grades 3-8)
Instructor: gwynethhughes@boisestate.edu
December 7, 4:30-6:30 p.m.
Whittier Elementary School, Boise

Composing/Decomposing Number (Grades K-6)
Instructor: jacquelynismail@boisestate.edu
December 7, 4:30-6:30 p.m.
Whittier Elementary School, Boise

Additional workshops are being planned for the Middleton area running from November—May. These will be posted to the MTI Follow-Up website by Nov. 1st: www.tinyurl.com/mtifollowup

E-Seminars Free for NCTM Members

The National Council of Teachers of Mathematics provides a series of e-seminars on mathematics content and instruction for members. You can access the e-seminars at their website:

http://nctm.org/profdev/content.aspx?id=23401

One example of an available e-seminar is “Mathematics Teaching and Student Learning: What Does the Research Say?” presented by Dr. James Heibert.

Description: Research findings from the past seventy-five years offer some significant conclusions about classroom teaching and student learning. Although teaching makes a real difference in what students learn, what kind of teaching is most effective depends on what we want students to learn. Using data from international comparisons to illustrate key points, this seminar will explore emerging research on the relationships between teaching and learning.