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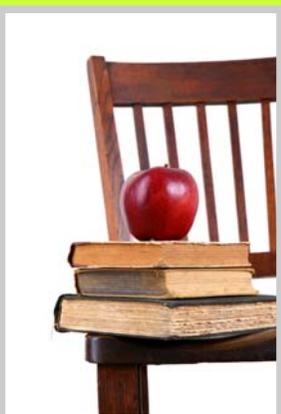
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Math In A Nutshell

Quick Tips for the Hurried Teacher

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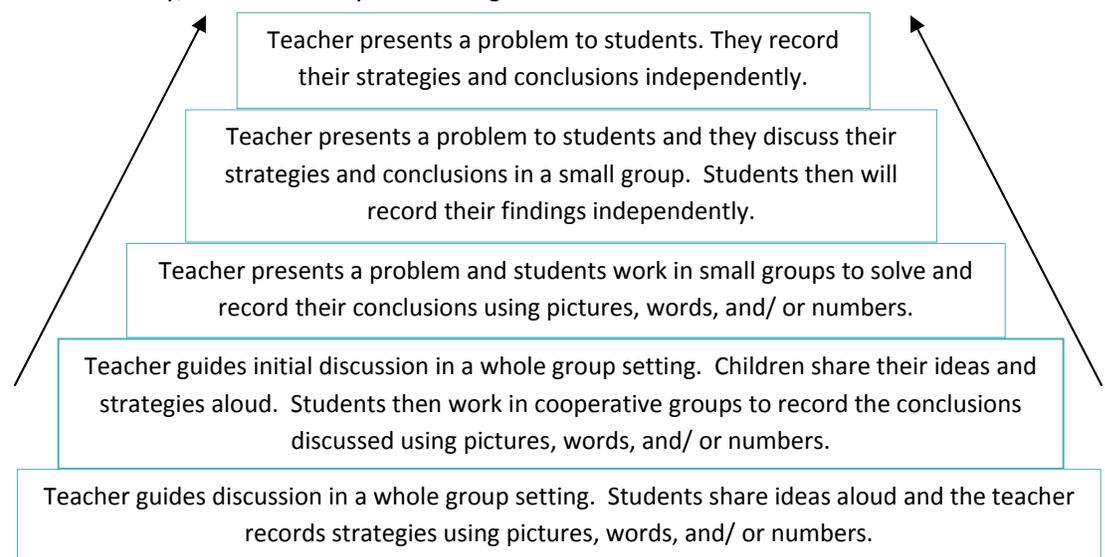
October 2008

In Their Own Words. . .

The rules and procedures of school mathematics make little sense to many students. They memorize examples, they follow instructions, they do their homework, and they take tests, but they cannot say what their answers mean. Even the successful ones claim, "I can do it, but I can't explain it." A student who says "page 73" when asked to describe what she is doing in algebra class is telling the truth: she is proceeding through the text, but she is not constructing for herself the mathematics she is trying to learn. (Jane Countryman, 1992)

How children think is not always apparent to us. Children can learn to complete a particular task in one situation, and this leads us to believe that they have a broader sense of understanding than they actually do. We believe that they are able to apply their knowledge, but they are unable to express in words their understanding of concepts. We need to find ways, then, to uncover the thinking behind their answers. One way is to allow children the opportunity to express their understanding in words.

These opportunities should be available for children at all grade levels. They may manifest themselves in different ways, depending upon the grade level. For example: children in first grade may discuss a strategy for completing a problem solving situation. As a class, they can share their ideas aloud and the teacher can record their strategies on chart paper using numbers, pictures, and/or words. Below is a basic hierarchy for engaging in written response at all grade levels. To enable students to become familiar with this process and to gain confidence in expressing themselves mathematically, the teacher may need to begin at a more basic level.





From children's earliest experiences with mathematics, it is important to help them understand that assertions should always have reasons. Questions such "Why do you think it is true?" and "Does anyone think the answer is different, and why do you think so?" help students see that statements need to be supported or refuted by evidence. (NCTM, 2000)

The bottom line is that we want our students to be able to express themselves mathematically. Intermediate students are assessed on their ability to complete a written response problem clearly and concisely on the Criterion Referenced Test (CRT). If we do not engage our students in mathematical discourse and written response experiences, they will not have the tools needed to be successful.

It is the teacher's responsibility to present these tools to their students.

- Do our children understand how to organize their work so others can understand their thinking?
- Have they been given opportunities to score their own work using a rubric?
- Have they been able to monitor their own progress to gain confidence in their mathematical abilities?
- Do they accurately use mathematical vocabulary to express their understanding?

It is imperative that teachers model written response across the grade levels.

Can our children convey their understanding of mathematical concepts in their own words?

Connecting to DOK (Depth of Knowledge)

The majority of questions assessing student understanding in a typical classroom are on a DOK level 1 or 2. In these circumstances, students are asked to recall and apply what they have learned. It is important that we, as teachers, move toward the level 3 questions that ask students to go past explaining their answers and instead require them to justify their thinking with details and reasoning. Throughout the school year, teachers should be asking their students to develop logical arguments for concepts, draw conclusions from observations, and to decide which concepts to apply in order to solve a complex non-routine problem. Students are capable of this type of learning, and we as teachers have to provide them with the opportunities to move in this direction of thinking and understanding.

Upcoming RPDP Courses:

CRT Math Camp for Grades 3-5

RPDP 549F 901, 1 graduate credit, UNLV Call Number: 56646
November 3, 17, 24, and December 1, 2008
Schorr Elementary School, Southeast Region

CRT Math Camp for Grades 3-5

RPDP 549F 902, 1 graduate credit, UNLV Call Number: 61148
November 3, 17, 24, and December 1, 2008
NW Region Training Lab, Northwest Region

Math Strand Exploration Grade Specific: K-1

RPDP 549H 906, 1 graduate credit, UNLV Call Number: 77747
November 4, 18, 25, and December 2, 2008
Lunt Elementary School, East Region

Math Strand Exploration Grade Specific: 2-3

RPDP 549H 908, 1 graduate credit, UNLV Call Number: 83597
November 12, 19, December 3, and 10, 2008
Jeffers Elementary School, Northeast Region

Math Strand Exploration Grade Specific: 4-5

RPDP 5449H 907, 1 graduate credit, UNLV Call Number: 81596
November 4, 18, 25, and December 2, 2008
Northwest Region Training Lab, Northwest Region

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Spotlight of the Month:

*Reflective thinking is the key to effective learning. This is true not only for students, but for all learners... Go to www.rpdp.net weekly for a *Math Nugget*. Access these weekly through the Elementary Math Resources link on www.rpdp.net.*

