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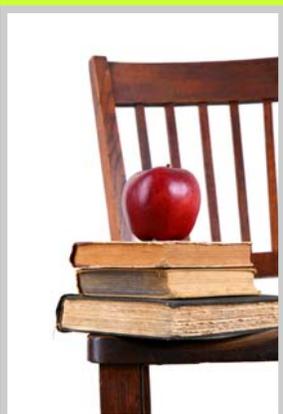
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# Math In A Nutshell

## Quick Tips for the Hurried Teacher

*Content Elementary Math Newsletter from the Southern Nevada Regional Professional Development Program*

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### *A Quest for Depth of Knowledge*

The Nevada Department of Education has begun a quest to rollout a change in ability level descriptors for assessments. Since the initial development, the Criterion Referenced Test (CRT) has assessed student knowledge on three cognitive levels; conceptual, procedural, and problem solving. These cognitive descriptors were based on the NAEP (National Assessment of Educational Progress) descriptors. NCLB (No Child Left Behind) requires assessments to “measure the depth and breadth of the state academic content standards for a given grade level” (*US Department of Education, 2–3, p. 12*). In order to improve our assessment of students, the state of Nevada has come onboard with twenty-two other states to adopt Norm Webb’s Model of Alignment and Depth-of-Knowledge levels.

Norm Webb’s Depth-of-Knowledge (DOK) is a measure to determine what students know and to what depth they reflect that knowledge. There are four Depth-of-Knowledge levels and these will permeate into all subject areas.

DOK Level 1	Recall and Reproduction	<u>Mathematics Example:</u> Determine the perimeter or area of rectangles given a drawing or labels.
DOK Level 2	Skills and Concepts	<u>Mathematics Example:</u> Classify plane and three dimensional figures.
DOK Level 3	Strategic Thinking	<u>Mathematics Example:</u> You have a given amount of money. Show the different combinations of coins to make that amount of money. Show the different combinations of bills and coins to make that amount of money. Use the fewest possible number of coins.
DOK Level 4	Extended Thinking	<u>Mathematics Example:</u> Collect data on the population of your school over the last ten years. Graph the information. What would you predict the school population will be in six years? What trends do you see in the population and what are a few reasons for the trends? Would enrollment figures suggest a need to increase the size of your school facility in the next ten years? Why or why not?

Up to this point, our perspective on assessments has been to focus on what we want our students to know. Assessments have been a target. We teach what we want our students to know, and we hope they succeed at hitting the target. Our perspective will now need to change. Assessments now will be the ceiling, the highest level a standard can be assessed at to measure a student’s knowledge. The goal in this change of perspective is to promote higher order thinking for all students.



This change in assessment must also be reflected in a change in our instruction. We are all aware of Bloom's Taxonomy and its effects on our teaching practices. How does Bloom's relate to Depth-of-Knowledge? Depth-of-Knowledge is NOT determined by the verb, as it is in Bloom's Taxonomy. The context in which the verb is used and the depth of thinking required determines the level. Depth-of-Knowledge focuses on how deeply a student has to know the content in order to answer a question, perform a task, or generate a product. As educators, we need to be cognizant of the levels to which we want our students to strive, incorporating depth of knowledge opportunities within our lesson planning. To help you better understand and incorporate these levels of thinking in your classroom instruction, go online to [www.rpdp.net](http://www.rpdp.net) for more information.

DOK Level 1: Recall and Recognition	Recall or recognition of a fact, information, (definitions, terms, dates, etc.) that requires only one step to complete a problem or task.
DOK Level 2: Skills and Concepts/ Basic Reasoning	Requires basic application of skills and concepts, decision making approaches. Requires deeper knowledge than just giving a definition, such as how or why.
DOK Level 3: Strategic Thinking/ Complex Reasoning	Requires deep understanding as exhibited through planning, using evidence, and more demanding cognitive reasoning.
DOK Level 4: Extended Thinking/ Reasoning	Requires complex reasoning, planning, and thinking generally over extended periods of time for an investigation or to complete multiple steps of an assessment item. Extended time period is not a distinguishing factor if the required work is only repetitive and does not require applying significant conceptual understanding and higher-order thinking.

### Upcoming RPDP Courses:

Math Strand Exploration Grade Specific: K-1  
RPDP 549H 901, 1 graduate credit, UNLV Call Number: 51196

Math Strand Exploration Grade Specific: 2-3  
RPDP 549H 902, 1 graduate credit, UNLV Call Number: 61547

Math Strand Exploration Grade Specific: 4-5  
RPDP 549H 903, 1 graduate credit, UNLV Call Number: 62397

Number Sense for Elementary School Teachers  
RPDP 546 901, 1 graduate credit, UNLV Call Number: 77046

Connecting the Math Strands K-2  
RPDP 549B 901, 1 graduate credit, UNLV Call Number: 92897

Number Sense for Elementary School Teachers  
RPDP 546 902, 1 graduate credit, UNLV Call Number: 82646

Connecting the Math Strands 3-5  
RPDP 549C 901, 1 graduate credit, UNLV Call Number: 00946

Number Sense for Elementary School Teachers  
RPDP 546 903, 1 graduate credit, UNLV Call Number: 91796

Assessing and Developing Number Concepts K-3  
To register contact Brenda Pearson - 799-4558 ext. 5345, 1 grad cr.

***www.rpdp.net***

### Spotlight of the Month:

Go to [www.rpdp.net](http://www.rpdp.net) for a direct link to the Nevada Department of Education website. You will find more information online about Norm Webb's Depth of Knowledge levels.

