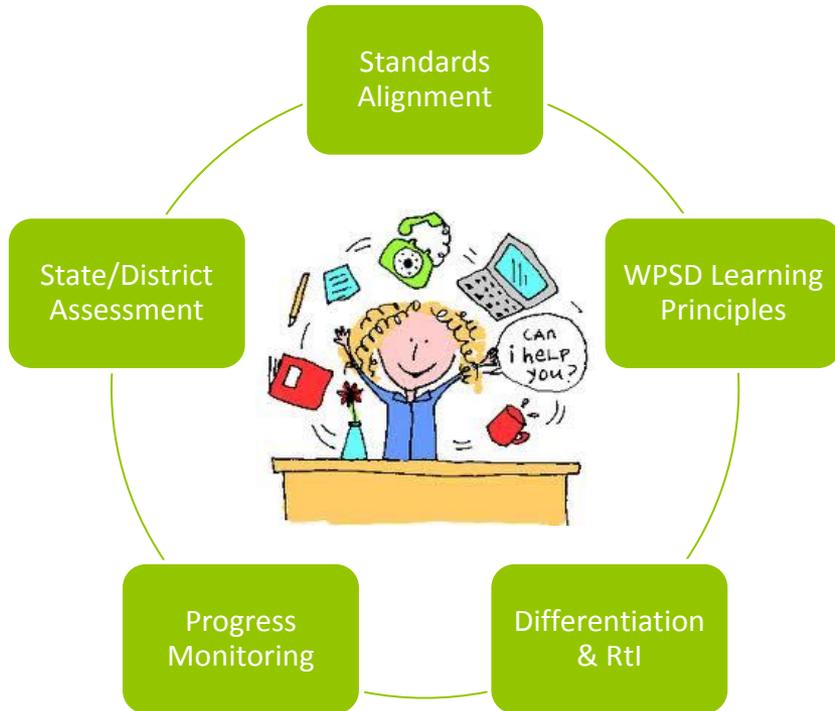


# Teaching with Depth

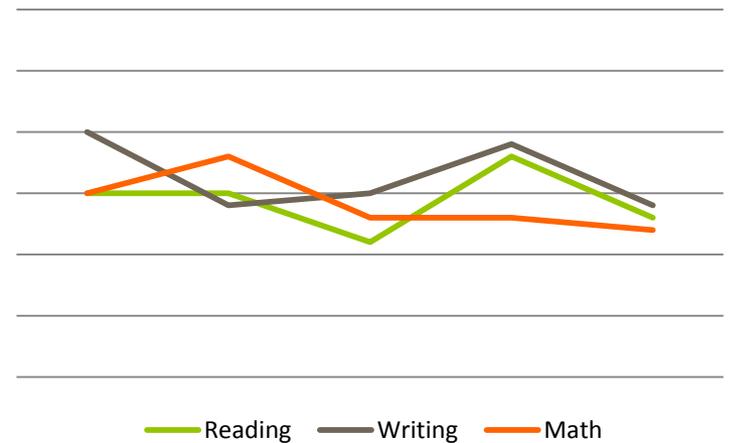


An Overview of Webb's Depth of Knowledge

# WPSD Disconnect



## Colorado Growth Model



# Refining Practice

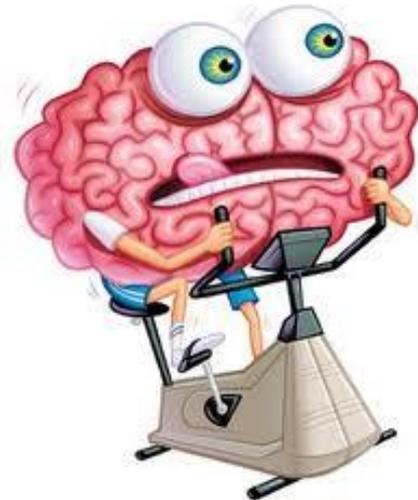
∞ High Yield Strategy → Depth of Knowledge



*Work Smarter  
Not Harder*

# What is DOK?

- ∞ A **scale of cognitive demand** that reflects the complexity of activities that teachers ask students to perform
- ∞ Based on the research of **Norman Webb**, University of Wisconsin Center for Education Research and the National Institute for Science Education



# Why DOK?

- ∞ Provides a vocabulary and a frame of reference when thinking about our students and how they engage with content
- ∞ Offers a common language to understand “rigor,” or cognitive demand, in assessments, as well as curricular units, lessons, and tasks
- ∞ Aligns instruction with standards with assessment
- ∞ Key component of quality assessments
- ∞ Guides item development for state and national assessments

DOK Is...



# Webb's DOK

- ∞ 4 Levels that grow in **cognitive complexity** and provide educators a lens on creating more cognitively **engaging** and **challenging** tasks
  - Level 1: Recall & Reproduction
  - Level 2: Skills & Concepts
  - Level 3: Strategic Thinking
  - Level 4: Extended Thinking
- ∞ Intro to Depth of Knowledge

# Focus

- ∞ DOK reflects **complexity** of the cognitive processes demanded by the task
- ∞ How deeply do students have to know the content in order to successfully complete an assessment or task?



# Level 1: Recall & Reproduction

- ☞ Recall or recognition of a fact, information, concept, or procedure
- ☞ Student either knows the answer or does not; the answer does not need to be “figured out” or “solved”



# Level 1: Recall & Reproduction Examples

- ☞ List animals that survive by eating other animals
- ☞ Locate or recall facts found in text
- ☞ Describe physical features of places
- ☞ Determine the perimeter or area of rectangles given a drawing or labels
- ☞ Identify elements of music using music terminology
- ☞ Identify basic rules for participating in simple games and activities



# Level 2: Skills & Concepts

- ∞ Includes the engagement of some mental processing beyond recalling or reproducing a response
- ∞ Acting on information in some manner; Requires students to make some decisions as to how to approach the question or problem
- ∞ May involve following or selecting appropriate procedures
- ∞ Working with a set of principles, categories, and protocols in routine problems
- ∞ Still one right answer



# Level 2: Skills & Concepts Examples

- ☞ Compare desert and tropical environments
- ☞ Identify and summarize the major events, problems, solutions, conflicts in literary text
- ☞ Explain the cause-effect of historical events
- ☞ Explain how good work habits are important at home, school, and on the job
- ☞ Classify plane and three dimensional figures
- ☞ Describe various styles of music



# Level 3: Strategic Thinking

- ∞ Items demand use of higher order thinking processes
- ∞ Deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning
- ∞ Requires student to go beyond; to explain, to generalize, or connect ideas
- ∞ Ability to solve a problem in a new context
- ∞ Tasks have more than one possible answer and require students to justify their response



# Level 3: Strategic Thinking Examples

- ✎ Compare consumer actions and analyze how these actions impact the environment
- ✎ Analyze or evaluate the effectiveness of literary elements (e.g., characterization, setting, point of view, conflict and resolution, plot structures)
- ✎ Solve a multiple-step problem and provide support with a mathematical explanation that justifies the answer
- ✎ Develop a scientific model for a complex idea
- ✎ Propose and evaluate solutions for an economic problem
- ✎ Explain, generalize or connect ideas, using supporting evidence from a text or source
- ✎ Create a dance that represents the characteristics of a culture

# Level 4: Extended Thinking

- ☞ Requires higher order thinking processes such as synthesis, reflection, and assessment
- ☞ Students are expected to make connections, relate ideas within the content or among content areas, and select or devise one approach among many alternatives on how the situation can be solved
- ☞ Non-routine manipulations
- ☞ Due to the complexity of cognitive demand, tasks require an extended period of time



# Level 4: Extended Thinking Examples

- ☞ Gather, analyze, organize, and interpret information from multiple (print and non print) sources to draft a reasoned report
- ☞ Analyzing author's craft (e.g., style, bias, literary techniques, point of view)
- ☞ Create an exercise plan applying the "FITT (Frequency, Intensity, Time, Type) Principle"



# Processing DOK Levels

## ∞ 4 Levels that grow in **cognitive complexity**

- Level 1: Recall & Reproduction
- Level 2: Skills & Concepts
- Level 3: Strategic Thinking
- Level 4: Extended Thinking

## ∞ Table Talk

- What is DOK
- Content Area Examples



# DOK Is Not...



# DOK ≠ Bloom's Taxonomy

- ∞ Bloom's describes the **type of thinking** required while DOK correlates to the **level of understanding** required of students to complete the activity
- ∞ The Depth of Knowledge is NOT determined by the verb (Bloom's Taxonomy), but by the context in which the verb is used and the depth of thinking required
- ∞ By increasing the DOK, teachers can teach students to adapt to challenges, work cooperatively, and solve problems on their own
- ∞ High DOK requires students to work without the constant supervision of teachers; working in groups, communicating with one other to solve challenging problems and freely offering their ideas

# DOK ≠ Verb

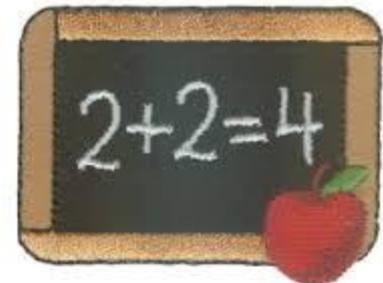
- ∞ The DOK is NOT determined by the verb, but by the context in which the verb is used and the depth of thinking required
- ∞ Example – Same verb with different DOK levels
  - DOK 1 – **Describe** three characteristics of metamorphic rocks.
    - Requires simple recall
  - DOK 2 – **Describe** the difference between metamorphic and igneous rocks.
    - Requires cognitive processing to determine the differences in the two rock types
  - DOK 3 – **Describe** a model that you might use to represent the relationships that exist within the rock cycle.
    - Requires deep understanding of rock cycles and a determination of how best to represent it

# DOK ≠ Verb

- ∞ Words like explain or analyze have to be considered in context
  - “Explain to me where you live” does not raise the DOK of a simple rote response
  - Even if the student has to use addresses or landmarks, the student is doing nothing more than recalling and reciting
- ∞ What comes after the verb is more important than the verb itself
  - “Analyze this sentence to decide if the commas have been used correctly” does not meet the criteria for high cognitive processing.
  - The student who has been taught the rule for using commas is merely using the rule.

# DOK ≠ Difficulty

- ∞ DOK is a reference to the **complexity** of mental processing that must occur to answer a question, perform a task, or generate a product
- ∞ Example:
  - Adding is a mental process
  - Knowing the rule for adding is the intended outcome that influences the DOK
  - Once someone learns the “rule” of how to add,  $4 + 3$  is a DOK of 1 and is also easy
  - Adding  $4,678,895 + 9,578,886$  is still a DOK of 1 but may be more “difficult”



# DOK ≠ Difficulty

- ∞ Difficulty is a reference to how many students answer a question correctly
- ∞ Example:
  - “How many of you know the definition of exaggerate?”
    - DOK 1 – Recall
    - If all of you know the definition, this question is an easy question
  - “How many of you know the definition of prescient?”
    - DOK 1 – Recall
    - If most of you do not know the definition, this question is a difficult question

# DOK Application



# Tie to Standards & Assessment

- ∞ The intended student learning outcome determines the DOK Level
- ∞ Evidence Outcomes in the Colorado Academic Standards and Assessment Frameworks all align to DOK levels
- ∞ Instruction and classroom assessments must reflect the DOK level of the objective or intended learning outcome



# DOK & TCAP

## 2013 TCAP Reading: % of Score Points by DOK Level

Reading	DOK 1	DOK 2	DOK 3
3	25%	56%	19%
4	18%	62%	30%
5	7%	67%	26%
6	11%	59%	31%
7	16%	45%	39%
8	13%	50%	37%
9	21%	45%	33%
10	10%	49%	42%

# DOK & TCAP

## 2013 TCAP Writing: % of Score Points by DOK Level

Reading	DOK 1	DOK 2	DOK 3
3	54%	16%	31%
4	49%	16%	35%
5	40%	20%	39%
6	36%	25%	39%
7	39%	22%	39%
8	36%	25%	39%
9	34%	24%	42%
10	35%	23%	42%

# DOK & TCAP

## 2013 TCAP Math: % of Score Points by DOK Level

Reading	DOK 1	DOK 2	DOK 3
3	24%	74%	2%
4	21%	58%	21%
5	18%	59%	22%
6	11%	66%	22%
7	11%	47%	42%
8	15%	40%	45%
9	13%	61%	26%
10	14%	54%	32%

# DOK & TCAP

## 2013 TCAP Science: % of Score Points by DOK Level

Reading	DOK 1	DOK 2	DOK 3
5	20%	59%	21%
8	15%	60%	25%
10	14%	59%	28%

🌀 What do your classroom assessments look like?

# Application Activity

- ☞ What are the 4 DOK Levels?
- ☞ What are the major differences between DOK 1/2 tasks and DOK 3/4 tasks?
- ☞ What levels should teachers be using in their classroom?
- ☞ Apply the 4 DOK levels to a unit from your curriculum.



# Summary

- ∞ **Webb's Depth of Knowledge** challenges us to **dig deeper** beyond the verb and into the thinking process to expand student learning
- ∞ We must consciously ask students to *deepen their thinking* in order to teach them to ***improve their thinking***
- ∞ **Independently**, students should be accessing their resources to apply their knowledge in new contexts and across disciplines



# Summary

- ∞ As we continue our journey of curriculum review into curriculum alignment, we must remain conscious of our questioning, our modeling, and our guidance to teach students how to ***deepen their thinking***
- ∞ Students will be asked to ***think deeply*** on the new assessments, be it PARCC or CMAS; we must prepare them for these expectations. And is that so bad? Developing our students to be better, independent thinkers?



# Next Steps?

