Depth Of Knowledge Basics

He who learns but does not think is lost. He who thinks but does not learn is in great danger….Confucius

Measured Progress

Depth of Knowledge (DOK)

- Adapted from the model used by Norman Webb, University of Wisconsin, to align standards with assessments
- Used for assessment alignment in more than twenty states

Depth of Knowledge

- Focuses on content standard in order to successfully complete an assessment/standard task
- Is descriptive, not a taxonomy
- Is not the same as difficulty

Why Depth of Knowledge?

- Serves as a mechanism to ensure that the intent of the standard and the level of student demonstration required by that standard matches the assessment items (required under NCLB)

- Provides cognitive-processing ceiling (highest level students can be assessed) for item development

Webb's Depth of Knowledge Levels:

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

It's NOT about the verb...

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.

Verbs are not always used appropriately...

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.**

DOK is about what follows the verb...

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.

The Verb Issue

- **DOK 3: *Describe*** a model that you might use to represent the relationships that exist within the rock cycle. (requires deep understanding of rock cycle and a determination of how best to represent it)
- **DOK 2: *Describe*** the difference between metamorphic and igneous rocks. (requires cognitive processing to determine the differences in the two rock types)
- **DOK 1: *Describe*** three characteristics of metamorphic rocks. (simple recall)

Same verb—three DOK levels

DOK is not about difficulty...

- **Difficulty is a reference to how many students answer a question correctly.**

"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 is about intended outcome, not 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.

- **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 + 4=8 is DOK 1 and is also easy.**
- **Adding 4,678,895 + 9,578,885 is still a DOK 1 but may be more "difficult."**

DOK Level 1:
Recall and Reproduction

- Requires **recall of information**, such as a fact, definition, term, or performance of a simple process or procedure
- Answering a Level 1 item can involve following a simple, well-known procedure or formula
- This also means following simple steps, recipes, or directions. Can be difficult without requiring reasoning. At DOK 1, students find "the right answer," and there is no debating the "correctness," ***it is either right or wrong.***

Recall and Reproduction DOK Level 1 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

Examples of DOK 1 in Music

Items	Why is this DOK 1?
1. Name the notes of the C Major scale	1. Simple recall of pre-learned knowledge
2. Name 4 periods of classical music.	2. Simple recall, but must be taught
3. Know that a sharp raises a note ½ step	3. Identify a #, recognize that it raises a pitch

Skills/Concepts: DOK Level 2

- **Includes the engagement of some mental processing beyond recalling or reproducing a response**

- **Items require students to make some decisions as to how to approach the question or problem**

- **Actions imply more than one mental or cognitive process/step**

- **Requires comparison of two or more concepts, finding similarities and differences, applying factual learning at the basic skill level. Main ideas – requires deeper knowledge than just the definition. Students must explain "how" or "why" and often estimate or interpret to respond.**

Skills/Concepts: DOK 2 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**
- **Predict a logical outcome based on information in a reading selection**
- **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**

Examples of DOK 2 in Music

Item	Why is this DOK 2?
1. Read and perform a simple rhythm	1. If the student *interprets* the rhythm (as opposed to repeating) it is DOK 2.
2. Play a simple melody or accompaniment	2. Student must make sense out of written notation and perform

Strategic Thinking: Level 3

- **Requires deep understanding exhibited through planning, using evidence, and more demanding cognitive reasoning**
- **The cognitive demands are complex and abstract**
- **An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3**
- **Students must reason or plan to find an acceptable solution to a problem. *More than one correct response or approach is possible.* Requires complex or abstract thinking, and application of knowledge or skill in a new and unique situation.**

DOK Level 3 Examples

- **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**

DOK 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**

Examples of DOK 3 in Music

Item	Why is this DOK 3?
1. Improvise a simple melody	1. New application of complex processes
2. Perform as a member of a conducted ensemble	2. Students make individual choices about performance
3. Compose a single line melody	3. New application of complex processes

Extended Thinking: Level 4

- **Requires <u>high cognitive demand</u> and is very complex**
- **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**
- **Due to the complexity of cognitive demand, DOK 4 often requires an extended period of time**
- **At this level, students typically identify a problem, plan a course of action, enact that plan, and make decisions based on collected data. Usually involves more time than one class period. Multiple solutions are possible. Students often connect multiple content areas to come up with unique and creative solutions.**

Extended Thinking: DOK 4 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"**

Extended Thinking: Level 4

DOK 4 requires high cognitive demand and is very complex. Students are expected to make connections—relate ideas *within* the content or *among* content areas—and have to select or devise one approach among many alternatives on how to solve the problem.

Due to the complexity of cognitive demand, DOK 4 often requires an extended period of time.

Remember…

- DOK is a scale of cognitive demand.
- Determining the DOK levels requires looking at the assessment item, not student work, in order to determine the level. DOK is about the item not the student.
- The context of the assessment item, and not the verb chosen, must be considered when determining DOK.