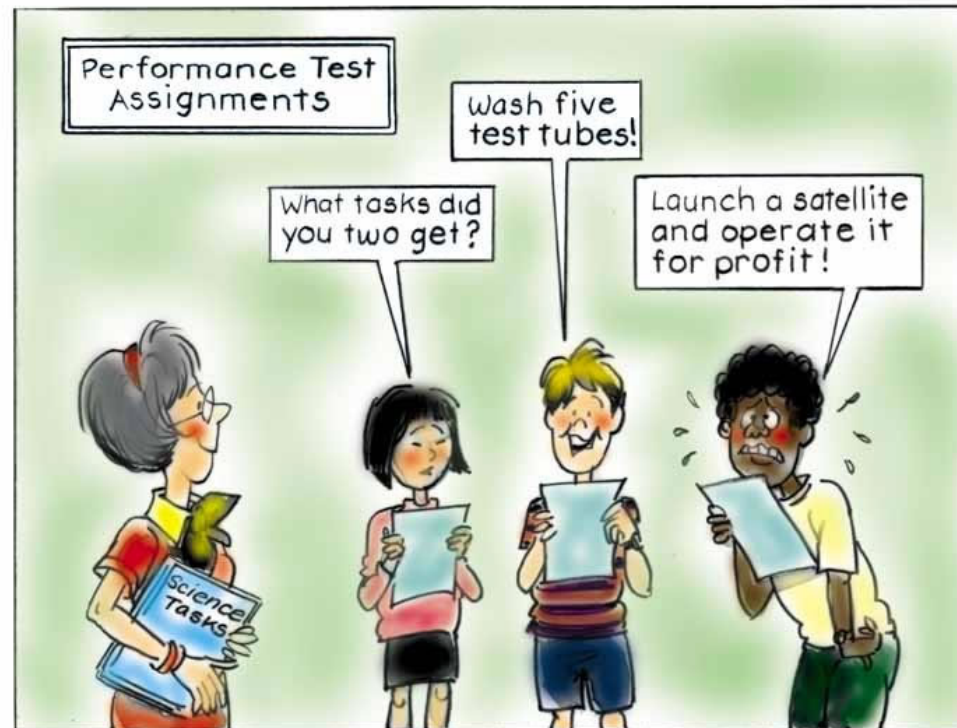


Performance Assessments are multi-step assignments with clear criteria, expectations, and processes which measure how well a student transfers Knowledge and applies complex skills to create or refine an original product.



DOK

Depth of Knowledge

Dr. Norman Webb

University of Wisconsin

November 5, 2012

Newtown High School

Faculty Meeting

What is Depth of Knowledge?

- A scale of **cognitive demand** (level of thinking) to align standards with assessments
- Based on the **research of Norman Webb**, University of Wisconsin Center for Education Research and the National Institute for Science Education.
- Defines the “**ceiling**” or **highest DOK level** for each core content standard for the state assessment
- Guides **item development** and **alignment** for state assessments

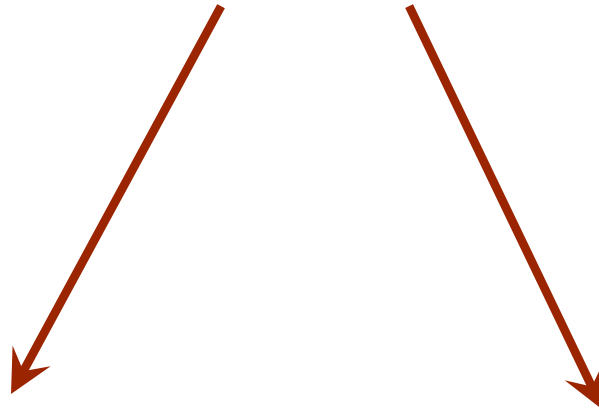
Why Depth of Knowledge?

- Mechanism to ensure that the intent of the standard and the level of the student demonstration required by that standard matches the assessment items
(as required under NCLB)
- To ensure that teaching/instruction is at a level that will promote student achievement

Alignment

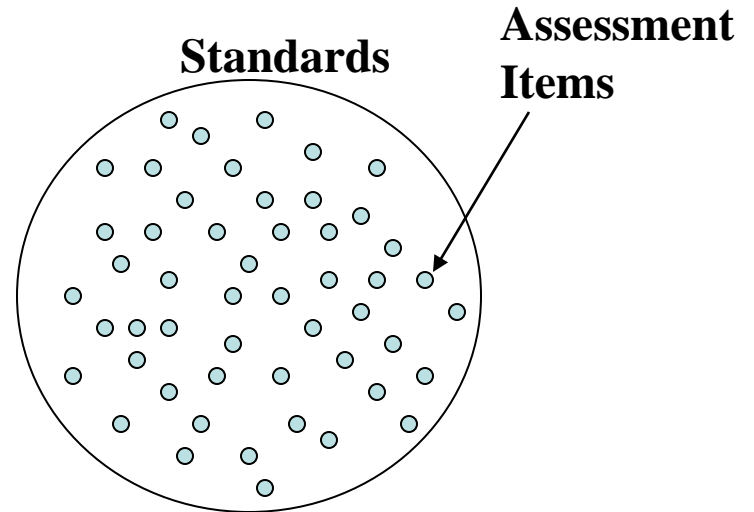
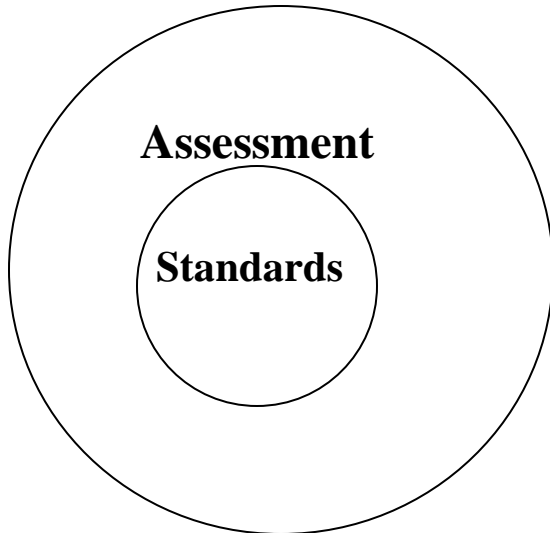
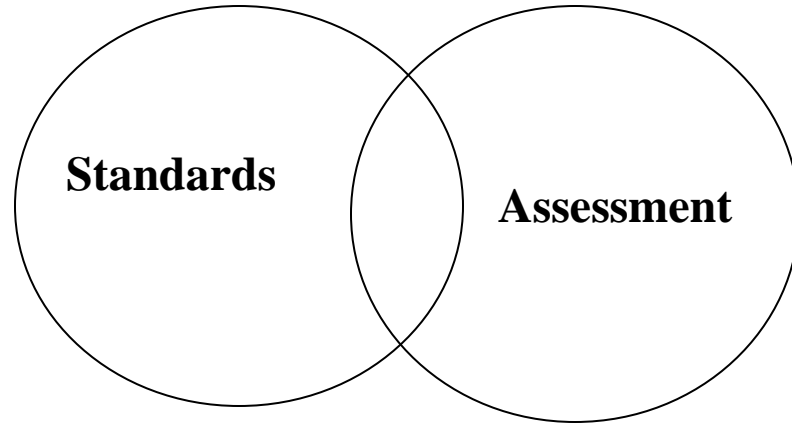
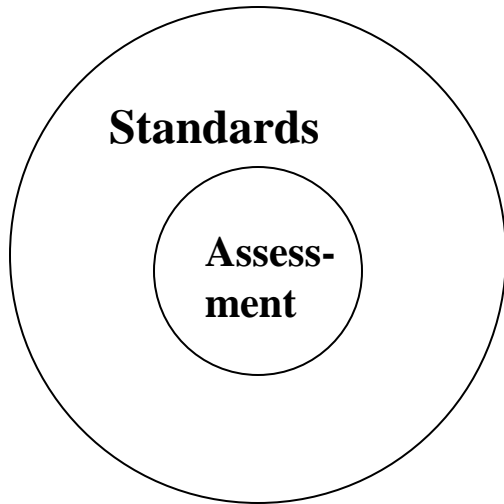
The degree to which expectations and assessments are in agreement and serve in conjunction with one another to guide the system toward students learning what is expected.

Standards



Curriculum → **Assessment**

Degree of Alignment



Depth of Knowledge

Level 1 Recall

Recall of a fact, information, or procedure.

Level 2 Skill/Concept

Use information or conceptual knowledge, two or more steps, etc.

Level 3 Strategic Thinking

Requires reasoning, developing plan or a sequence of steps, some complexity, more than one possible answer.

Level 4 Extended Thinking

Requires an investigation, time to think and process multiple conditions of the problem.

BLOOM'S TAXONOMY

KNOWLEDGE / REMEMBERING

"The recall of specifics and universals, involving little more than bringing to mind the appropriate material"

COMPREHENSION / UNDERSTANDING

"Ability to process knowledge on a low level such that the knowledge can be reproduced or communicated without a verbatim repetition."

APPLICATION / APPLYING

"Using information in another familiar situation."

ANALYSIS / ANALYSING

"Breaking information into parts to explore understandings and relationships."

SYNTHESIS and EVALUATION / EVALUATING and CREATING

"Putting together elements & parts to form a whole, then making value judgments about the method."

WEBB'S DOK

RECALL

Recall of a fact, information, or procedure (e.g., What are 3 critical skill cues for the overhand throw?)

SKILL/CONCEPT

Use of information, conceptual knowledge, procedures, two or more steps, etc.

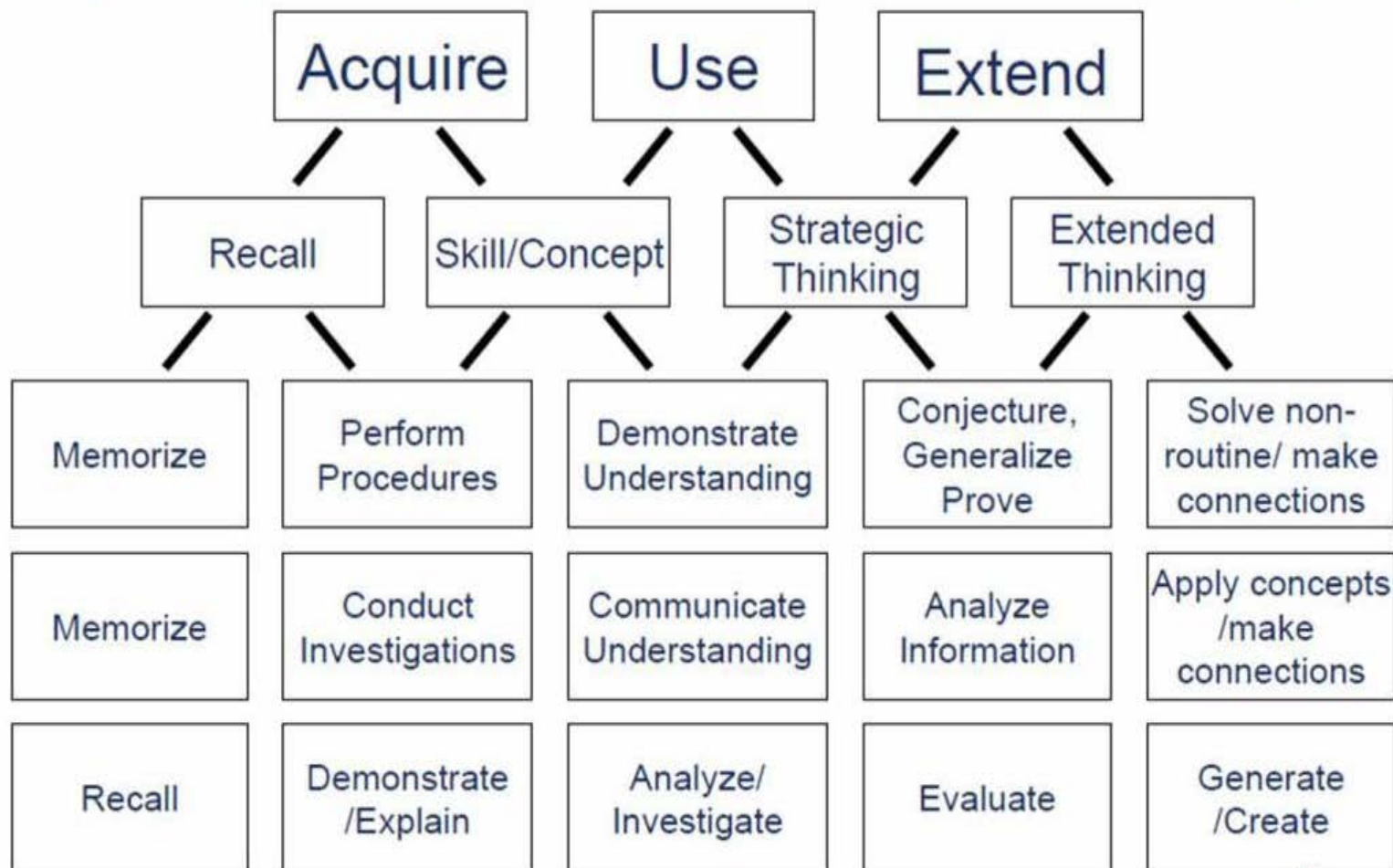
STRATEGIC THINKING

Requires reasoning, developing a plan or sequence of steps; has some complexity; more than one possible answer

EXTENDED THINKING

Requires an investigation; time to think and process multiple conditions of the problem or task.

Expectations for Student Performance



Applying Webb's DOK

Reading - Level 1

- requires students to use simple skills or abilities to recall or locate facts from the text
- focus on basic initial comprehension, not on analysis or interpretation
- Items require shallow/literal understanding of text presented and often consist of verbatim recall from text or simple understanding of a single word or phrase

Reading - Level 2

- Requires both initial comprehension and subsequent processing of text or portion of text
- Important concepts are covered but not in a complex way
- Items at this level may include words such as “paraphrase, summarize, interpret, infer, classify, organize, collect, display, and compare”
- Items may require students to apply

Reading - Level 3

- Requires deep knowledge
- Students encouraged to go beyond text
- Students asked to explain, generalize, or connect ideas
- Students must be able to support their thinking, citing references from the text or other sources
- Items may involve abstract theme identification, inferences between or across passages, application of prior knowledge, or text support for analytical judgment about a text

Reading - Level 4

- Requires complex reasoning, planning, developing, and thinking most likely over an extended period of time, such as multiple works by the same author or from the same time period
- Students take information from at least one passage and are asked to apply this information to a new task.
- They may also be asked to develop hypotheses and perform complex analyses of the connections among texts. Some examples that represent but do not constitute all of Level 4 performance are:
 - * Analyze and synthesize information from multiple sources.
 - * Examine and explain alternative perspectives across a variety of sources.
 - * Describe and illustrate how common themes are found across texts from different cultures.



Cognitive Complexity vs Difficulty

Difficulty -- how many students answered the question correctly

Cognitive Complexity -- level of thinking required to answer the question including the number of steps, required “think time”, and number of possible responses

Same Verb - Three Different DOK Levels

- **DOK 1** - Describe three characteristics of metamorphic rock. (Requires simple recall)
- **DOK 2** - Describe the difference between metamorphic rock and igneous rock. (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 a deep understanding of rock cycle and a determination of how best to represent it)

Which of the following numbers, when rounded to the nearest thousand, becomes 27,000?

(a) 26,099

(b) 26,490

(c) 27,381

(d) 27,550

(e) 27,640

A car odometer registered 41,256.9 miles when a highway sign warned of a detour 1,200 feet ahead. What will the odometer read when the car reaches the detour? (5,280 feet = 1 mile)

- (a) 42,456.9
- (b) 41,279.9
- (c) 41,261.3
- (d) 41,259.2
- (e) 41,257.1

Did you use the calculator on this question?

Yes No

This question refers to pieces N , P , and Q .

In Mr. Bell's classes, the students voted for their favorite shape for a symbol. Here are the results.

	Class 1	Class 2	Class 3
Shape N	9	14	11
Shape P	1	9	17
Shape Q	22	7	2

Using the information in the chart, Mr. Bell must select one of the shapes to be the symbol. Which one should he select and why?

The shape Mr. Bell should select: _____

Explain:

EXAMPLE OF STANDARDS AND DEPTH-OF-KNOWLEDGE LEVELS CONTENT AREA: GEOMETRY

	Mathematics Standard	Depth-of-Knowledge Level
State D Grade 8	VI. Geometric and Spatial Sense	
VI.2	Explore transformations of geometric figures.	3
State B Grade 8	II. Geometry	
II.4	Graph on a coordinate plane similar figures, reflections, and translations.	2
State A Grade 6	IV. Geometry and Spatial Sense	
IV.D.	Investigate and predict the results of transformations of shapes, figures, and models including slides, flips, and turns.	
IV.D.1	Identify and describe the results of translations (slides), reflections (flips), rotations (turns), or glide reflections.	2

EXAMPLE OF STANDARDS AND DEPTH-OF-KNOWLEDGE LEVELS

CONTENT AREA: PROBABILITY AND STATISTICS

	Mathematics Standard	Depth-of-Knowledge Level
State D Grade 8	VII. Data Analysis, Probability & Statistics	
VII.3	Formulate, predict, and defend positions taken that are based on data collected.	3
State B Grade 8	VI. Probability and Statistics	
VI.1	Collect data involving 2 variables and display on a scatter plot; interpret results.	3

What to bring on Tuesday, November 6th

- Any device you have to access the internet
- A copy of a rubric you use or plan to use
- A copy of the Common Core - hard copy or via internet
- DOK materials