



ELA Module 4: <u>Depth of Knowledge (DOK)</u> and

Smarter Balanced Assessment Consortium (SBAC) Sample Item and Pilot Test Review

Summer Common Core Institute Educational Services July 2013

Adapted from CCCOE course and website resources.

What is Depth of Knowledge (DOK)?

- A scale of cognitive demand (thinking) designed 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.
- A guide for item development for Smarter Balanced Assessments – the assessments which will come with <u>Common Core State</u> <u>Standards</u>

Rating Depth of Knowledge (DOK)

DOK measures the degree to which the knowledge elicited from students on a classroom task or assessment is as complex as what students are expected to know (as stated in the standards).

In other words, DOK helps us answer this question: What is the level of <u>cognitive demand</u> needed to complete the task?



Rating Depth of Knowledge (DOK)

Use of DOK ratings aid in alignment of *STANDARDS* and *ASSESSMENT*, and therefore *INSTRUCTION*.



Sample Item Specification

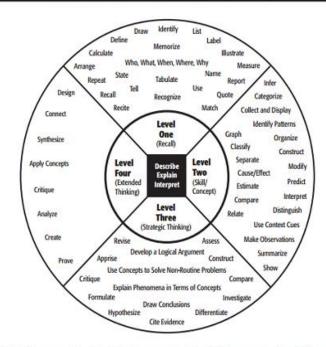
Sample Item ID:	ELA.08.CR.1.XXXXX.13.021
Grade:	8
Claim:	1: Students can read closely and analytically to comprehend a range of
Cialifi.	increasingly complex literary and informational texts.
	13. TEXT STRUCTURES/ FEATURES: Relate knowledge of text structures,
Assessment Target:	formats, or genre-specific features (visual/graphic elements) to analyze the
	impact (advantages- disadvantages) on meaning or presentation
Standard(s):	<u>RI-5,</u> RI-7
DOK:	3
Difficulty:	Medium
Item Type: Constructed Response	
Score Points:	0, 1, 2
Correct Response:	See rubric
Stimulus/Passage(s):	How Do We Measure the Quality of Our Waters?
Acknowledgement(s):	EPA, http://water.epa.gov/learn/resources/measure.cfm
Item/Task Notes:	Students will need scratch paper to conduct pre-work for this task.
How this item/task	To successfully complete this task the student must examine the structure of
contributes to the	an informational text, analyze the advantages and disadvantages of that
"sufficient evidence"	structure, and consider alternative structures, formats or features to improve
for this claim:	the text.
Target-specific	
attributes (e.g.,	Students will be required to enter text on the computer.
accessibility issues):	

DOK Model

Contains examples of <u>key words</u> which may be associated with each DOK level

Contains <u>sample</u> <u>activities</u> which correspond with each DOK level

Depth of Knowledge (DOK) Levels



Level One Activities	Level Two Activities	Level Three Activities	Level Four Activities	
Recall elements and details of story structure, such as sequence of events, character, plot and setting. Conduct basic mathematical	Identify and summarize the major events in a narrative. Use context cues to identify the meaning of unfamiliar words.	Support ideas with details and examples. Use voice appropriate to the purpose and audience.	Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results/ solutions.	
calculations. Label locations on a map. Represent in words or diagrams a scientific concept or relationship. Perform routine procedures like measuring length or using punctuation marks correctly. Describe the features of a place or people.	Solve routine multiple-step problems. Describe the cause/effect of a particular event. Identify patterns in events or behavior. Formulate a routine problem given data and conditions. Organize, represent and interpret	Identify research questions and design investigations for a scientific problem. Develop a scientific model for a complex situation. Determine the author's purpose and describe how it affects the interpretation of a reading selection.	Apply mathematical model to illuminate a problem or situation. Analyze and synthesize information from multiple sources. Describe and illustrate how commos themes are lound across texts from different cultures. Design a mathematical model to inform and solve a practical	

Hitto, Namon I. and atters. "Web Aligoment Tool" 14 July 2005. Wisconsin Center of Educational Research. University of Wisconsin-Madium. J Feb. 2006. http://www.wcsmit.edu/MAT/Index.org/v/

Let's Read About DOK...

Take a few minutes to read the article: *Applying Webb's Depth of Knowledge (DOK) levels in Reading* by Karin Hess

Then discuss one key component of each DOK level with your elbow partner.

Webb's 4 Levels of Cognitive Complexity

- DOK 1: Recall & Reproduction
- **DOK 2:** Basic Application of Skills/Concepts
- DOK 3: Strategic Thinking and Reasoning
- DOK 4: Extended Thinking

LEVEL 1: RECALL

- Requires recall of information, such as a fact, definition, term, or simple procedure and/or performing simple procedures. The activity requires a shallow understanding of the topic or text.
- In ELA, the focus is on basic initial comprehension, not on analysis or interpretation.

Participant call out! Read one Level 1 activity from the DOK Model.



LEVEL 2: Skills and Concepts

- 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
- Participant call out! Read one Level 2 activity from the DOK Model.

 Actions imply more than one mental or cognitive process/step

LEVEL 3: Strategic Thinking

- Requires deep understanding exhibited through planning, using evidence, and more demanding <u>cognitive</u> reasoning
- The cognitive demands are complex and abstract
- Participant call out! Read one Level 3 activity from the DOK Model.

 An assessment item that has more than one possible answer and requires students to justify the response would most likely be a Level 3

•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

Participant call out! Read one Level 4 activity from the DOK Model.



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



Karin Hess Video

Karin Hess is the author of the DOK article we read earlier in the module.

In this short video, she describes components of the DOK model.

Please be prepared to share an "AHA" from the video with the group.



Karin Hess Video

One Statement Across DOK Levels

Recall & Reproduction (DOK 1) Skills & Concepts/Basic Reasoning (DOK 2) Strategic Thinking/ Complex Reasoning (DOK 3) Extended Thinking/ Reasoning (DOK 4)

All four use the verb identify.

Students will identify essential information needed to accomplish a task. Students will identify information in a passage that is supported by fact. Students will identify the appropriateness of an argument using supporting evidence. Students will identify interrelationships (themes, ideas, concepts) developed in more than one literary work.

Recall vs. Skills & Concepts

ELA	Mathematics
Describe the physical features of a place.	What is 4 x 7/4? What does x^5/x^2 equal?
Identify and <u>summarize</u> the major events, problem, solution, and <u>conflicts</u> in a text.	Yoshi spent 1 and 1/3 hours reading and ³ / ₄ hour doing chores. How much time did Yoshi spend on these activities?

Strategic Thinking

ELA	Mathematics
Analyze or evaluate the effectiveness of literary elements (plot, setting, conflict, point-of view).	Solve a multi-step problem, and provide support with a mathematical explanation that justifies the answer.
	Beto and Jose were playing a game. At the end of each game, the loser gave the winner a penny. After a while, Jose won 3 games and Beto had 3 more pennies than he did when he began. How many games did they play.

Extended Thinking

ELA/Social Science

Mathematics / Science

Write an analysis of an issue. Present multiple points of view and argue for a position in a way that could stimulate the read to consider new perspectives.

Design a wellness plan for your school.

Given a problem situation, research and present multiple solutions. Be sure to provide alternative responses and reasons for adopting each. Beto and Jose were playing a game. At the end of each game, the loser gave the winner a penny. After a while, Jose won 3 games and Beto had 3 more pennies than he did when he began. How many games did they play. Solve the problem, and then find a way to show whether your answer is the only one possible.

Specify a problem, identify solution paths, solve the problem, and report the results.

Set up an experiment to test different variables affecting water temperature. Present your results.

Guided Practice

Rate the Level of DOK

- Solve multi-step problems and provide support with mathematical explanation that justifies the answer.
- Classify plane and 3-D figures.
- Specify a problem, identify solution paths, solve the problem and report the results.
- Solve problems with more than one cognitive process.

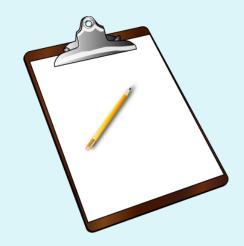
- Explain cause-effect of historical events.
- Analyze or evaluate the effectiveness of literary elements (plot, setting ...)
- Describe physical features of a place.
- Analyze and explain the multiple perspectives or issues within and across time.

Collaborative Practice

Rate the DOK



- Compare desert and tropical areas.
- Gather, analyze, organize and interpret data from multiple sources and draft a reasoned response.
- Determine the area of a triangle given a drawing or labels.



DOK <u>is</u> about intended outcome, <u>not</u> about difficulty

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







Point to Consider

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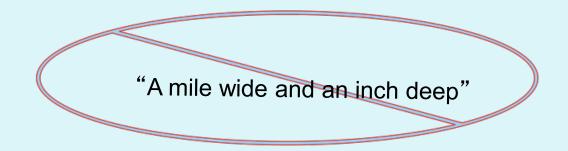
Extending the length of an activity alone does not necessarily create rigor

Task	Thinking
Collecting data samples over several months	Recall
Organizing the data in a chart	Skills/ concepts
Using this chart to make and justify predictions	Strategic Thinking
Developing a generalized model from this data and applying it to a new situation	Extending Thinking



Another Point to Consider

The alignment between tasks, standards, and assessments allows for cognitive complexity with a deeper understanding.



Remember DOK is...

- ... descriptive
- ... focused on how deeply a student has to know the content in order to respond ... NOT the same as difficulty.
- ... NOT the same as Bloom's Taxonomy



Collaborative Practice

Let's Practice!

You may collaborate with a partner or group.

FREE INSIDE - CHOCO-YUMMY BEAR
FREE INSIDE - CHOCO-YUMMY BEAK
UPE - CHOCO Bear sp amazing
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S One free and water A
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FVVV Vight MIGDA
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as Choco-Yummies take your taste buds for a ride.
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combination of whole wheat, cocoa, and sugar - together with milk these choco - Yumme
Ch. ing as make These and
Yummy, tasty and delicious these
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that the
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10c0-Y
Yummy, tasty and delicious that's Choco-Yummies!
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per serving	Yummies	skim milk
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Calories from Fat	30	
		aily Valu
Total Fat 3g*	5%	. (
Saturated Fat 0.5g	2%	:
Polyunsaturated Fat	0g	
Monounsaturated Fa	at 1g	
Cholesterol Omg	0%	
Sodium 210mg	9%	1
Potassium 45mg	1%	;
Total Carbohydrate 24g	8%	10
Dietary Fiber 1g	4%	
Sugars 10g		
Other Carbohydrates 1	3g	
Protein 1g		
Vitamin A	5%	1(
Vitamin C	15%	1
Calcium	4%	20
Iron	25%	2
Vitamin D	0%	1(
Thiamin	25%	3(
Riboflavin	25%	3
Niacin	25%	2
Vitamin B6	25%	2
Folic Acid	25%	2
Zinc	25%	3(
 Amount in Cereal. A semprovides 3.5g fat, less this odium, 250mg potassii sugars) and 5g protein. Percent Daity Values are the Your daity values are the Your daity values. 	an 5m gchol um, 30 gcanb vased on a 2,4 ay be higi	esterol, 27 oohydrate (000 calorie
Calories	2,000	2,500
Total Fat Lessthan Sat Fat Lessthan	65g 20g	80g 25g
Cholesterol Lessthan	209 300mg	-20g 300mg
	2,400mg	2,400mg
Potassium Total Carbohydrate	3,500mg 300a	3,500mg 375g
Dietary Fiber	25g	30g

Which level of Depth of Knowledge would these questions assess?

1. In the phrase "Choco-Yummies come alive and dance with glee," what does glee mean?

- A. joy
- B. singers
- C. strength
- D. dancers

2. Which is true according to the Nutrition Facts chart?

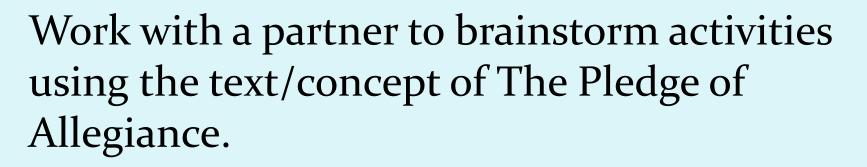
- A. Brown sugar is listed as an ingredient.
- B. Servings have 25 grams of carbohydrates.
- C. There are about 19 servings in each box.
- D. There is more vitamin D than niacin.

3. On the Choco-Yummies cereal box, there are several examples of facts and opinions.

a.List TWO statements from the box that are opinions.

b. Explain how these TWO statements make customers want to buy and eat Choco-Yummies.

Application—Your Turn!



Brainstorm student activities using this text that would match each of the DOK levels. Jot your ideas down on the form provided.



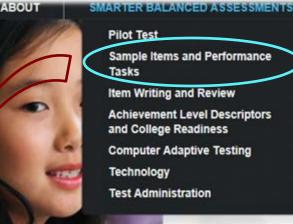
Shifting Gears...



Sample Assessment Items

<u>http://www.smarterbalanced.org/sample-items-and-performance-tasks/</u>

SBAC





Explore Sample Items and Performance Tasks

HIGHER EDUCATION

English language arts/literacy and mathematics questions illustrate innovative items and rigor of Smarter Balanced assessments.

READ MORE

K-12 EDUCATION



Explore sample items and performance tasks:

English language arts/literacy

- Mathematics
- Frequently asked questions (PDF)

ELA Sample Items Currently Available

VIEW MORE ENGLISH LANGUAGE ARTS / LITERACY SAMPLE ITEMS

Filter By: Technology Enhanced | Performance Tasks | Connections Across Grades | Difficulty Progressions

Grade Band	Reading	Writing	Speaking & Listening	Research/Inquiry	Performance Tasks
3-5	Grandma Ruth 1 Grandma Ruth 2 Grandma Ruth 3	Writing – Oliver Writing – School Day	Exercise in Space 1 Exercise in Space 2		Animal Defenses
6-8	Planes on the Brain 1 Planes on the Brain 2 Planes on the Brain 3	Writing – Cell Phones			Garden
High School	Diamonds in the Sky 1 Diamonds in the Sky 2 Diamonds in the Sky 3	Writing – Kudzu Writing			





Collaborative practice:

• Review the form



4th Grade Reading SAMPLE ITEM

Smarter Balanced Assessment Sample Items – Reading. Sample Group Dig-In and Discussion Group Members:

http://www.smarterbalanced.org/sample-items-and-performance-tasks/

About this Item

Name: Grandma Ruth 2

Grade: 4

CCSS: RL-4; L-4, L-5c

This item focuses on the ability to recognize the relationship between word meaning and context.

Step 1. Locate the CCCSS standards being assessed on this item in the box above. Look up the full text of these standards and paraphrase or write the full text of the standards below.

SBAC Analysis Form - WCCUSD Educational Services - KG 2-1-13



Collaborative Practice:SBAC Reading ItemGroup Share-Out

SBAC

Practice and Pilot Tests

"The Smarter Balanced Practice Tests provide an early look at sets of assessment questions aligned to the Common Core for grades 3–8 and 11 in both English language arts/literacy and mathematics. The release of the Practice Tests follows the Smarter Balanced Pilot Test, the first large-scale tryout of items and performance tasks, conducted February – May 2013."



http://www.smarterbalanced.org/pilot-test/



Practice and Pilot Tests

As your facilitator guides the review of the Pilot Test Items, take time to discuss the following questions with a partner/small group:

• What are some of the types of questions that students will encounter on the new Smarter Balanced Assessment?

•What kinds of support will students need in order to be successful on these items?



What have we learned?

What is your *new* knowledge of the CCSS?

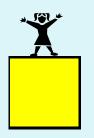
Please complete the "Post-Common Core Training Survey" that your facilitators will pass out.



Reflection



What are 3 points you want to remember?



What squares with you or makes sense?



What is still circling around in your mind?

nahalo Dank U Köszi Merci chacubo Grazie Thank mauruuru Takk 10 Gracias lanke Kiitos

Thank you for your participation in the Summer Common Core Institute!