DIGGING DEEPER INTO DEPTH OF KNOWLEDGE

RIGOR AND RELEVANCE IN THE COMMON CORE ERA
WEBINAR OUTCOMES

• Understand the Depth of Knowledge model
• Recognize the impact of Common Core and Smarter Balance on rigor and relevancy within the classroom setting
• Identify implications on classroom instructional practices
• Identify implications on classroom assessment practices
WEBINAR OUTLINE

• Set the foundation
• Explore the Depth Of Knowledge Model
• Make Connections
  • Common Core
  • Smarter Balanced
• Identify Implications
  • Classroom Instruction
  • Classroom Assessment
Setting the Foundation

- Curriculum Standards are written for many reasons two of which are...
  - To give teachers the idea of what students need to know and be able to do with pertinent information within a content area...and
  - To give test developers the information necessary to create an aligned assessment to determine if students have learned and can apply that information.
• Every Curriculum Standard includes **verbs**...These verbs have a twofold purpose...

• They define the depth of knowledge and cognitive complexity expected for classroom instruction (Depth of Knowledge) and...

• They represent how students will be expected to demonstrate their knowledge, concepts and skills on the state assessment  (Target-Method Match)
DEPTH OF KNOWLEDGE (DOK) IS...
• Required by Federal Mandates…

• No Child Left Behind (NCLB) and subsequent waivers require state assessments to “measure the depth and breadth of the state academic content standards for a given grade level” (U.S. Department of Education, 2003, p. 12)
SETTING THE FOUNDATION

• Depth of Knowledge (DOK)...

• Indicates the cognitive demand limits for the state assessment
• Defines the “ceiling” or highest DOK level for each standard for the state assessment
• Guides item development for the state assessment, classification of test items, and alignment to the state standards.
SETTING THE FOUNDATION

- Depth of Knowledge (DOK)...
- Ensures alignment of content standards and state assessment items
- Ensures that an assessment item is as cognitively demanding as the expectation of the content standard
- Provides a consistent framework across content areas for alignment
SETTING THE FOUNDATION

• Where Did DOK Come From?

• Developed by Dr. Norman Webb, of the Wisconsin Center for Educational Research.

• Developed in 1997
DOK Compared to Bloom’s Taxonomy

DOK is similar to Bloom’s Taxonomy in that they both relate to complexity of thought.

However, they differ in both scope and application.
SETTING THE FOUNDATION

• DOK Compared to Bloom’s Taxonomy

• Bloom’s Taxonomy categorizes the cognitive skills required of the brain when faced with a new task, therefore describing the type of thinking processes necessary to answer a question.
SETTNG THE FOUNDATION

- DOK Compared to Bloom’s Taxonomy

- ...while the DOK model relates more closely to the depth of content understanding and scope of a learning activity, which manifests in the skills required to complete the task from beginning to end.
<table>
<thead>
<tr>
<th>Revised Bloom's Taxonomy levels</th>
<th>Level 1 Recall and Reproduction</th>
<th>Level 2 Skills and Concepts</th>
<th>Level 3 Strategic Thinking/Reasoning</th>
<th>Level 4 Extended Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remember</strong></td>
<td>Recall, recognize, locate basic facts, ideas, principles</td>
<td>Specify and explain relationships</td>
<td>Explain, generalize, or connect ideas using supporting evidence</td>
<td>Explain how concepts or ideas specifically relate to other content domains or concepts</td>
</tr>
<tr>
<td>Retrieve knowledge from long-term memory, recognize, recall, locate, identify</td>
<td>Recall or identify conversions: between units of measure</td>
<td>Give non-examples/examples</td>
<td>Explain phenomena in terms of concepts</td>
<td>Develop generalizations of the results obtained or strategies used and apply them to new problem situations</td>
</tr>
<tr>
<td>Understand</td>
<td>Compose/decompose numbers</td>
<td>Locate points on a grid</td>
<td>Make and record observations</td>
<td>Write full composition to meet specific purpose</td>
</tr>
<tr>
<td>Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion, predict, compare/contrast, match like ideas, explain, construct models</td>
<td>Symbolize math relationships</td>
<td>Summarize results, concepts, ideas</td>
<td>Identify themes</td>
<td></td>
</tr>
<tr>
<td>Apply</td>
<td>Write simple sentences</td>
<td>Infer or predict from data or texts</td>
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</tr>
<tr>
<td>Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task</td>
<td>Describe/explain how or why</td>
<td>Identify main ideas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analyze</td>
<td>Follow simple/routine procedures</td>
<td>Select a procedure according to task needed and perform it</td>
<td>Use concepts to solve non-routine problems</td>
<td>Select or devise an approach among many alternatives to solve a novel problem</td>
</tr>
<tr>
<td>Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g., for bias or point of view)</td>
<td>Solve routine problem applying multiple concepts or decision points</td>
<td>Solve routine problem applying multiple concepts or decision points</td>
<td>Design investigation for a specific purpose or research question</td>
<td></td>
</tr>
<tr>
<td>Evaluate</td>
<td>Retrieve information from a table or graph to answer a question</td>
<td>Retrieve information from a graph and use it solve a multi-step problem</td>
<td>Conduct a designed investigation</td>
<td>Conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results</td>
</tr>
<tr>
<td>Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique</td>
<td>Identify or locate specific information contained in maps, charts, tables, graphs, or diagrams</td>
<td>Use models to represent concepts</td>
<td>Illustrate how multiple themes (historical, geographic, social) may be interrelated</td>
<td></td>
</tr>
<tr>
<td>Create</td>
<td>Brainstorm ideas, concepts, or perspectives related to a topic or concept</td>
<td>Generate conjectures or hypotheses based on observations or prior knowledge</td>
<td>Synthesize information within one source or text</td>
<td>Synthesize information across multiple sources or texts</td>
</tr>
<tr>
<td>Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, construct, produce</td>
<td></td>
<td>Formulate an original problem</td>
<td>Design a model to inform and solve a real-world, complex, or abstract situations</td>
<td></td>
</tr>
</tbody>
</table>
THE DEPTH OF KNOWLEDGE MODEL
THE DOK MODEL

• Assigning depth-of-knowledge to content standards and assessment items is an essential requirement of alignment analysis.

• There are four levels of depth of knowledge:
  - Recall and Reproduction – Level 1
  - Skills & Concepts – Level 2
  - Strategic thinking – Level 3
  - Extended thinking – Level 4
THE DOK MODEL

**DOK (Depth of Knowledge)**

**Level 1: Recall**
- A. Focus is on specific facts, definitions, details, or using routine procedures (measure, divide, follow recipe, etc.)
- B. Can be "difficult" without requiring "deep" content knowledge to respond to item (memorize a complex theory without being able to explain its meaning or apply it to a real world situation)
- C. Combination of level ones does NOT = level 2
- D. One right answer

**Level 2: Skill/Concept**
- A. Focus is on applying skills and concepts (in a familiar/typical situation), relationships (compare, cause-effect), main ideas
- B. Requires deeper knowledge than definition
- C. Explaining how or why
- D. Making decisions
- E. Estimating, interpreting in order to respond
- F. One right answer

**Level 3: Strategic Reasoning**
- A. Focus is on reasoning & planning in order to respond (e.g., write an essay, apply in new/novel situation)
- B. Complex and abstract thinking is required
- C. Often need to provide support for reasoning or conclusions drawn
- D. More than one "correct" response/approach is often possible

**Level 4: Extended Reasoning**
- A. Requires complex reasoning, planning, and thinking (generally over extended periods of time) for the investigation
- B. Assessment activities have multiple steps with extended time provided
- C. Students may be asked to relate concepts within the content area and among other content areas
- D. Students make real-world applications in new situations

*"He who learns but does not think, is lost! He who thinks but does not learn is in great danger." Confucius"*
RECALL AND REPRODUCTION: LEVEL 1

• DOK 1 requires recall of information, such as a fact, trend, definition, term, or performance of a simple process or procedure. It could also ask students to recognize or identify specific information from a given prompt.

• Answering a Level 1 item can involve following a simple, well-known procedure or formula. DOK 1 is characterized by recall of simple skills and abilities and to recall who, what, where and when type information.
LEVEL 1: EXAMPLES

• List animals that survive by eating other animals.
• Locate or recall facts explicitly 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 musical terminology.
• Identify basic rules for participating in simple games and activities.
SKILLS/CONCEPTS: LEVEL 2

• DOK 2 includes the engagement of some mental processing beyond recalling or reproducing a response. Items make ask students to compare/contrast, convert information from one form to another and require students to make some decisions as to how to approach the question or problem.

• These actions imply more than one mental or cognitive process/step as students have to describe or explain a result or “how” and “why.”
LEVEL 2: EXAMPLES

• Compare desert and tropical environments
• Identify and summarize the major events, problem, solution, conflicts in literary text
• Explain the cause-effect of social events
• Predict a logical outcome based on information from text
• Explain and give examples of how good work habits are important at home, school, and on the job.
• Classify plane and three dimensional figures
• Describe various styles of music
STRATEGIC THINKING: LEVEL 3

• DOK 3 requires deep understanding as exhibited through planning, using evidence, and more demanding cognitive reasoning. The cognitive demands at Level 3 are complex and abstract. It goes beyond explaining the “why” and “how” to justifying them through application and artifacts.

• A higher order assessment item that has more than one possible answer and requires students to justify the response they give would typically be a Level 3.
LEVEL 3: EXAMPLES

• Propose and evaluate possible solutions to a social problem.
• Develop and justify a scientific model for a complex issue
• Solve a multiple-step problem and provide support with a mathematical explanation that justifies the answer
• Explain, generalize or connect ideas, using supporting evidence from a text or source
• Create a dance that represents the characteristics of a culture
EXTENDED THINKING: LEVEL 4

• DOK 4 requires high cognitive demand and the work is very complex. Students are expected to connect and —relate ideas within the content or among content areas. This level often requires a task or product that provides evidence that the cognitive demand has been met by the students.

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

• Gather, analyze, organize, and interpret information from multiple (print and non print sources) to share with others

• Analyzing author’s craft (e.g., style, bias, literary techniques, point of view)

• Describe and illustrate how common themes can be interpreted from many texts across many cultures
LEVEL 4: EXAMPLES

- Create and participate in a mock trial
- Specify a problem within their community and develop a reasonable solution and make the results public.
- Write and produce an original song
THE DOK MODEL

• Consider this...

• The Depth of Knowledge is **NOT** only determined by the verb used within the standard. One needs to consider the context in which the verb is used: the cognitive demand or rigor of thought, the depth of content knowledge and the application of content that students must use to compete a given task.
THE DOK MODEL

Same verb—three DOK levels

- **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)
REMEMBER...

- Depth of Knowledge (DOK) is a scale of cognitive demand.
- DOK Levels 2, 3, and 4 are often built on DOK Level 1
- DOK addresses the content being assessed and the depth to which we expect students to demonstrate understanding of that content.
• The context of the assessment item/standard must be considered to determine the DOK—not just a look at what verb was chosen.

• If there is uncertainty about which level the standard address, it is appropriate to select the high of the two levels.

• It is about complexity in thinking and task completion using content knowledge not difficulty.
• The new Common Core State Standards were developed to help schools focus students on college and career readiness.

• As such the standards are “fewer, higher and deeper” and focus schools on supporting the deeper learning of content that translates into a deeper application of knowledge and skills.
How more rigorous are these new standards?

In the past State tests used closed responses and multiple choice items resulting in low rigor/low relevance (A).

The new assessments based on CCSS will include performance-based tasks, open ended questions and application which results in high rigor/high relevance (D).
Educators will need to shift how they teach and assess

Preparing students now to be ready for those types of assessments is the reality for teachers in the next few years.

Shift from rote learning to critical thinking and application.
Figure 8. Percent of Common Core ELA and Literacy Standards at each Depth of Knowledge Level

- Level 1: Recall and Reproduction (7%)
- Level 2: Skills and Concepts (12%)
- Level 3: Strategic Thinking (55%)
- Level 4: Extended Thinking (26%)
Figure 12. Percent of Common Core Mathematics Standards at each Depth of Knowledge Level

- Level 2: Skills and Concepts (54%)
- Level 3: Strategic Thinking (20%)
- Level 4: Extended Thinking (5%)
- Level 1: Recall and Reproduction (21%)
## MIND SHIFTS

<table>
<thead>
<tr>
<th>Mind Shift</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The goal of curriculum should not be the coverage of content, but rather the discovery of content.</td>
<td>Standards dictate what students should learn, but not how the content should be taught. Curriculum now should be written around the performance desired from our students as a result of their investigations into a variety of concepts, skills, and strategies. These need to be developed across content areas.</td>
</tr>
<tr>
<td>2. A deep understanding of the content to be taught is paramount</td>
<td>In order to effectively plan lessons, deliver high quality instruction, and analyze student progress, we need to have a deep and flexible understanding of the content we teach. With this deep understanding comes the ability to anticipate students’ misconceptions, see the linkages between ideas, and make explicit connections to real life.</td>
</tr>
<tr>
<td>Mind Shift</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3. In our classrooms, it is the students’ voices, not the teachers’, that are heard</td>
<td>What the standards demand from our students is a greater focus on metacognitive activities that encourage them to reflect and talk about their own understandings and beliefs, while listening to the understandings, reactions, and motivations of others.</td>
</tr>
<tr>
<td>4. We are preparing our students to do the learning without us</td>
<td>Our students need to be taught persistence and the importance of stamina. The ability to apply strategies, construct arguments, create representations, persevere when solving problems, employ technology, critique, and understand the perspectives of others, will come from the sophisticated work that educators do in preparing students to be independent.</td>
</tr>
</tbody>
</table>
# MIND SHIFTS

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<tbody>
<tr>
<td>5. We are educating our children for an unknown future</td>
<td>As the change agents in the education of our children, we need to push ourselves to consider a new direction for our teaching and its impact on our children’s tomorrow. We are no longer educating for today, but rather preparing our students for a future where they will need to think, innovate, collaborate, problem solve, and compete globally.</td>
</tr>
<tr>
<td>6. We have a responsibility to help each student reach higher</td>
<td>Great respect should be awarded for the complexity of the art of teaching. In order to move our students to rigorous standards, we need an even more extensive repertoire of instructional strategies than ever before.</td>
</tr>
<tr>
<td>7. We can’t ignore the evidence before us</td>
<td>Research indicates that the use of formative assessment to guide instruction causes great gains in student achievement. At the outset of any unit or lesson should be the identification of evidence that the students’ will have successfully met expectations.</td>
</tr>
</tbody>
</table>
SMARTER BALANCED ASSESSMENT

MAKING CONNECTIONS
SMARTER BALANCED ITEM TYPES

• Four Major Types of Items
  • Selected Response*
  • Constructed Response*
    • Extended Constructed Response (ECR) (Math)
  • Technology Enhanced*
  • Performance Tasks

*Any of these item types may be computer adaptive (CAT)
<table>
<thead>
<tr>
<th>Depth-of-Knowledge Level</th>
<th>English Language Arts</th>
<th>Math</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1.</strong> Draws on basic knowledge and rote learning</td>
<td>25%</td>
<td>24%</td>
</tr>
<tr>
<td><strong>Level 2.</strong> Requires some application of what’s been learned and some cognitive processing</td>
<td>38%</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Level 3.</strong> Requires the ability to research, synthesize, reason with evidence, and communicate effectively</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Level 4.</strong> Requires extended planning, research, and problem solving that call on students’ self-management and metacognitive skills</td>
<td>11%</td>
<td>11%</td>
</tr>
</tbody>
</table>
TECHNOLOGY ENHANCED

- Website
  - http://sampleitems.smarterbalanced.org/itempreview/sbac/ELA.htm
PERFORMANCE TASKS (PT)

• Performance tasks, the most complex of all items, include the following elements:
  □ Integrate knowledge and skills across multiple claims.
  □ Measure capacities such as depth of understanding, research skills, and/or complex analysis with relevant evidence.
  □ Require student-initiated planning, management of information/data and ideas, and/or interaction with other materials.
  □ Reflect a real-world task and/or scenario-based problem
  □ Allow for multiple approaches.
  □ Represent content that is relevant and meaningful to students.
  □ Allow for demonstration of important knowledge and skills.
Grade 7 Mathematics Sample PT Form

Prework: (Prior to the start of Session 1)

In preparation for this task, the teacher will guide a brief class discussion about the considerations that need to be made when remodeling a bedroom. The teacher will explain that “wood flooring” is any product manufactured from timber that is designed as a permanent covering for a floor. The teacher will explain that a “coat of paint” is a thin layer of paint covering a surface. The teacher will explain that for some types of paint, more than one coat of paint may be applied to the surface that is being painted. The teacher will explain that the budget for a remodeling project must account for the cost of all materials used as well as the cost of labor.

Prework: (Prior to the start of Session 2)

The teacher will explain that a “floor plan” for a room is a scale diagram showing the view from above of the relationship between the pieces of furniture in the room. The teacher will explain that an “heirloom” is a valued possession passed down through the generations of a family.
Remodeling a Bedroom

Session 1

You are remodeling a bedroom for a client. Your job will include installing new flooring, painting the walls, buying new furniture, and then arranging the new furniture in the bedroom. Your client has set a total budget of $4500 for this project.

Part A

New Flooring

The bedroom floor is in the shape of a rectangle. It is 15 feet long and 12 feet wide.

Your client has requested that you install either oak flooring or maple flooring.

The oak flooring costs $6.75 per square foot for materials.

The maple flooring costs $8.00 per square foot for materials.

The cost you charge for labor will be the same for either flooring option.

How much money will your client save if you install oak flooring instead of maple flooring? Explain or show your reasoning. You may use diagrams, drawings, or equations as well as words.
Part B

Paint the Walls

The height of the bedroom is 9 feet. There are 4 rectangular windows in the room that are each 30 inches wide and 36 inches high. You will not paint the windows, the floor, or the ceiling. You will paint the rest of the room, including the door. Your client likes two colors, Light-at-Dawn and Cloudy Sunrise. Both colors are only available in 1-gallon cans.

Light-at-Dawn: The regular price of a 1-gallon can is $24, but it is on sale for 25% off the regular price. This type of paint requires 2 coats.

Cloudy Sunrise: The price of a 1-gallon can is $28. This type of paint only requires 1 coat.

Each gallon of paint will cover an area of about 350 square feet.

Your client has stated that if the cost for using Cloudy Sunrise is no more than 5% greater than the cost for using Light-at-Dawn, then you should use Cloudy Sunrise.

Which paint color should you use? Explain or show your reasoning. You may use diagrams, drawings, or equations as well as words.
Part C

Estimate the Total Cost for Materials and Installation

Your client has requested an estimate of the total cost of installing new flooring and painting the walls.

Make a detailed estimate of the total cost of installing new oak flooring and painting the walls. The total cost is the sum of the costs for materials and labor. You must decide how much you will charge the client for your labor.

- A reasonable labor charge for installing flooring is between $2.50 and $5.00 per square foot.
- A reasonable labor charge for painting the walls is between $0.75 and $1.50 per square foot.

How much money will remain from your client’s original budget of $4500 after the total cost of installing new oak flooring and painting the walls has been subtracted?

$ ____________________

End of Session 1

[You will not be allowed to return to Session 1 after clicking “Submit.”]
Session 2

New Furniture Catalog

Part D

Buy New Furniture

After you installed new flooring and painted the walls, your client states that there is $2347 remaining in the budget to buy new furniture.

Your client would like you to spend as much of the remaining budget as possible.

Click on the “New Furniture Catalog” link above to shop for new furniture. You must buy the following:

- 1 bed set
- 1 mattress set
- 1 dresser
- 1 nightstand
- 1 desk

The bed set and the mattress set must be the same size.

List the pieces of furniture you will buy from the catalog.

How much money will remain in your client’s budget after you purchase the furniture? Explain how you know you will spend as much of the remaining budget as possible.
Part E

Floor Plan

Make a scale drawing of the bedroom floor on the graph paper that was provided to you. Include the dimensions in your drawing. You may use any scale you like, but the entire scale drawing must fit on one piece of graph paper. Be sure to indicate the scale you use.

Part F

Arrange the Furniture

Decide how you will arrange the new furniture, leaving room for an heirloom rug in the shape of a circle with a diameter of 6 feet. There can be no furniture arranged on top of the rug.

Make a floor plan by representing the new furniture on your scale drawing of the bedroom. Label each piece of furniture and include the dimensions in your drawing.

Explain how you know that there will be room for the heirloom rug.
INSTRUCTIONAL IMPLICATIONS
While the design of the Smarter Balanced assessment is important information that we all need to be aware of, it is the rigor of the assessment that is most essential. We must match our classroom instruction and assessment strategies to match!
IMPLICATIONS FOR CLASSROOM INSTRUCTION

• Ensure a tight alignment between classroom instruction and all assessment opportunities. Teach to the level of application that students will be assessed at.

• Shift from teaching to cover topic upon topic to students developing a depth of understanding. Utilize in-depth instructional strategies.

• Shift from rote learning to critical thinking. Increase the use of performance tasks and project-based learning.
IMPLICATIONS FOR CLASSROOM INSTRUCTION

• Make the formative assessment process an integral part of teaching and learning

• Create and use clear learning targets with every lesson and develop a clear, shared understanding of proficiency on those learning targets.

• Use descriptive, actionable feedback to guide inquiry and deep understanding and application of content
IMPLICATIONS FOR CLASSROOM INSTRUCTION

• Use effective questioning strategies to engage students in higher order thinking and problem solving

• DOK Question Stems
<table>
<thead>
<tr>
<th>DOK 1</th>
<th>DOK 2</th>
</tr>
</thead>
</table>
| Can you recall ____?  
When did ____ happen?  
Who was ____?  
How can you recognize ____?  
What is ____?  
How can you find the meaning of ____?  
Can you recall ____?  
Can you select ____?  
How would you write ____?  
What might you include on a list about ____?  
Who discovered ____?  
What is the formula for ____?  
Can you identify ____?  
How would you describe ____? | Can you explain how ____ affected ____?  
How would you apply what you learned to develop ____?  
How would you compare ____?  
Contrast ____?  
How would you classify ____?  
How are ____ alike? Different?  
How would you classify the type of ____?  
What can you say about ____?  
How would you summarize ____?  
How would you summarize ____?  
What steps are needed to edit ____?  
When would you use an outline to ____?  
How would you estimate ____?  
How could you organize ____?  
What would you use to classify ____?  
What do you notice about ____? |
<table>
<thead>
<tr>
<th>DOK 3</th>
<th>DOK 4</th>
</tr>
</thead>
</table>
| How is ____ related to ____?  
What conclusions can you draw ____?  
How would you adapt ____ to create a different ____?  
How would you test ____?  
Can you predict the outcome if ____?  
What is the best answer? Why?  
What conclusion can be drawn from these three texts?  
What is your interpretation of this text?  
Support your rationale.  
How would you describe the sequence of ____?  
What facts would you select to support ____?  
Can you elaborate on the reason ____?  
What would happen if ____?  
Can you formulate a theory for ____?  
How would you test ____?  
Can you elaborate on the reason ____? | Write a thesis, drawing conclusions from multiple sources.  
Design and conduct an experiment.  
Gather information to develop alternative explanations for the results of an experiment.  
Write a research paper on a topic.  
Apply information from one text to another text to develop a persuasive argument.  
What information can you gather to support your idea about ____?  
DOK 4 would most likely be the writing of a research paper or applying information from one text to another text to develop a persuasive argument.  
DOK 4 requires time for extended thinking. |
IMPLICATIONS FOR CLASSROOM INSTRUCTION

• Make active reflection an integral part of learning as students become Self and Peer Assessors

• Encourage and provide opportunity for students to transfer knowledge from one content area to another both within and across subject areas.
IMPLICATIONS FOR CLASSROOM INSTRUCTION

• Make learning from and correcting mistakes an embedded process within then teaching and learning process. Show kids how to learn from errors and improve toward proficiency.

• Give every student the opportunity for Success

• Give students the gift of struggle.
INSTRUCTIONAL IMPLICATIONS

• Balance student tasks, activities and problems to target procedural skill and fluency, conceptual understanding, and real world application
## Shifts in ELA/ Literacy

<table>
<thead>
<tr>
<th>Shift 1</th>
<th>Balancing Informational &amp; Literary Text</th>
<th>Students read a true balance of informational and literary texts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift 2</td>
<td>Knowledge in the Disciplines</td>
<td>Students build knowledge about the world (domains/content areas) through TEXT rather than the teacher or activities</td>
</tr>
<tr>
<td>Shift 3</td>
<td>Staircase of Complexity</td>
<td>Students read the central, grade appropriate text around which instruction is centered. Teachers are patient, create more time and space and support in the curriculum for close reading.</td>
</tr>
<tr>
<td>Shift 4</td>
<td>Text-based Answers</td>
<td>Students engage in rich and rigorous evidence based conversations about text.</td>
</tr>
<tr>
<td>Shift 5</td>
<td>Writing from Sources</td>
<td>Writing emphasizes use of evidence from sources to inform or make an argument.</td>
</tr>
<tr>
<td>Shift 6</td>
<td>Academic Vocabulary</td>
<td>Students constantly build the transferable vocabulary they need to access grade level complex texts. This can be done effectively by spiraling like content in increasingly complex texts.</td>
</tr>
</tbody>
</table>
ELA INSTRUCTIONAL IMPLICATIONS

1. Regular practice for all students with complex text and its academic vocabulary

2. Reading and writing (speaking and listening) grounded in evidence from text

3. Building knowledge through content-rich nonfiction and informational texts
### Shifts in Mathematics

<table>
<thead>
<tr>
<th>Shift</th>
<th>Focus</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift 1</td>
<td>Focus</td>
<td>Teachers significantly narrow and deepen the scope of how time and energy is spent in the math classroom. They do so in order to focus deeply on only the concepts that are prioritized in the standards.</td>
</tr>
<tr>
<td>Shift 2</td>
<td>Coherence</td>
<td>Principals and teachers carefully connect the learning within and across grades so that students can build new understanding onto foundations built in previous years.</td>
</tr>
<tr>
<td>Shift 3</td>
<td>Fluency</td>
<td>Students are expected to have speed and accuracy with simple calculations; teachers structure class time and/or homework time for students to memorize, through repetition, core functions.</td>
</tr>
<tr>
<td>Shift 4</td>
<td>Deep Understanding</td>
<td>Students deeply understand and can operate easily within a math concept before moving on. They learn more than the trick to get the answer right. They learn the math.</td>
</tr>
<tr>
<td>Shift 5</td>
<td>Application</td>
<td>Students are expected to use math and choose the appropriate concept for application even when they are not prompted to do so.</td>
</tr>
<tr>
<td>Shift 6</td>
<td>Dual Intensity</td>
<td>Students are practicing and understanding. There is more than a balance between these two things in the classroom – both are occurring with intensity.</td>
</tr>
</tbody>
</table>
MATH INSTRUCTIONAL IMPLICATIONS

1. Make sense of problems and persevere in solving them
2. Reason abstractly and quantitatively
3. Construct viable arguments and critique the reasoning of others
4. Model with Mathematics
5. Use appropriate tools strategically
6. Attend to precision
7. Look for and make use of structure
8. Look for and express regularity in repeated reasoning
ASSESSMENT
IMPLICATIONS
IMPLICATIONS FOR CLASSROOM ASSESSMENT

- Assessments need to evolve to be more rigorous and real world relevant, must match our teaching to this same standard.
- Assessments must engage students in higher-order thinking skills
- Assessments have to be more performance based.
IMPLICATIONS FOR CLASSROOM ASSESSMENT

• Portfolios of various learning artifacts and learning products need to be used by teachers and students to document growth.

• Rubric development and rubric use must become an integral part of the assessment process.
IMPLICATIONS FOR CLASSROOM ASSESSMENT

• Assessment data need to be used by students to further learning

• Assessments must generate independent learners and users of data

• Assessment data must be used (by both teachers and students) in the moment to inform “next steps” in the learning process
IMPLICATIONS FOR CLASSROOM ASSESSMENT

• Assessments must show evidence of student learning over time

• Assessment systems have to be balanced with an equal mix of formative and summative information, and the

• Formative Assessment Process must be embedded in the instructional process in every classroom
• In PLCs, have teachers work together to determine DOK levels of curriculum standards.
• Discuss what this might look like on an assessment and develop assessment items or tasks
• Dialogue around the skills and content students will need to be able to accomplish and master these tasks? What rigor?
• Think through the instructional practices teachers must begin to utilize to teach students for success on these assessments tasks, both in the classroom and on the state assessment...make them as aligned as possible
NEXT STEPS

• In PLCs discuss how the formative assessment process will give us information along the way that will help us monitor our students’ progress
• Discuss how adjustments might need to occur to get students to proficiency or mastery
• Review summative, classroom assessments, ensure they are designed in a similar fashion and represent the rigor required for mastery
• Create an Action Plan
QUESTIONS
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