Depth of Knowledge for Teachers: A Common Language for Rigor

“The most important thing is not to stop questioning. Curiosity has its own reason for existing.” -Albert Einstein
Welcome!

The Agenda…

• Introductions
• Our Purpose: Connecting DOK to TAPS
• TAPS Overview
• What is DOK?
• Practicing with DOK
• Enhancing rigor in the classroom
• Motivating Students
• Creating rigor school wide
• Reflection and Closing
• “Over 21 Rule”

• Please silence electronic devices.
AEIOU Norms

A: Appreciate one another’s expertise

E: Engage fully in this learning experience

I: Invest in the learning

O: Open your mind to new ways of thinking

U: Unite in purpose: To improve student learning

Source: Learning Forward
The Purpose: DOK Supports Our Work

DOK allows a teacher to...

- Plan for instruction to the rigor level of the standard, which increases student learning.

- Recognize and describe the rigor of the questioning strategies posed in the classroom. (TAPS)

- Identify and ensure appropriate levels of DOK are addressed for the standard/curriculum and instruction in the classroom. (TAPS)

- Enhance and support assessment development and assessment administration processes.

- Have descriptive conversations based on TAPS using a common language for rigor.

- Increase the rigor and style of his/her questioning strategies, items, and tasks posed in the classroom.
TAPS Overview and DOK
Teacher Keys
Effectiveness System

Teacher Keys
Effectiveness System
(Generates a Teacher Effectiveness Measure)

Teacher Assessment on Performance Standards
50%
Observations and Documentation

Student Growth
30%

- Teachers of SGP Grades and Courses
  - Student Growth Percentiles
- Teachers of Non-SGP Grades and Courses
  - LEA Determined Measures

Professional Growth
20%
### TAPS Domains and Performance Standards

<table>
<thead>
<tr>
<th>Domain</th>
<th>Categories/Performance Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PLANNING</strong></td>
<td>1. Professional Knowledge 2. Instructional Planning</td>
</tr>
<tr>
<td><strong>INSTRUCTIONAL DELIVERY</strong></td>
<td>3. Instructional Strategies 4. Differentiated Instruction</td>
</tr>
<tr>
<td><strong>ASSESSMENT OF AND FOR LEARNING</strong></td>
<td>5. Assessment Strategies 6. Assessment Uses</td>
</tr>
<tr>
<td><strong>PROFESSIONALISM AND COMMUNICATION</strong></td>
<td>9. Professionalism 10. Communication</td>
</tr>
</tbody>
</table>

5 Domains-Categories 10 Performance Standards-Duties
## Instructional Delivery

### Performance Standard 3: Instructional Strategies

The teacher promotes student learning by using research-based instructional strategies relevant to the content to engage students in active learning and to facilitate the students’ acquisition of key knowledge and skills.

### Sample Performance Indicators

**Examples may include, but are not limited to:**

**The teacher:**
- Engages students in active learning and maintains interest.
- Builds upon students’ existing knowledge and skills.
- Reinforces learning goals consistently throughout the lesson.
- Uses a variety of research-based instructional strategies and resources

<table>
<thead>
<tr>
<th>Level IV</th>
<th>Level III</th>
<th>Level II</th>
<th>Level I</th>
</tr>
</thead>
<tbody>
<tr>
<td>In addition to meeting the requirements for Level III...</td>
<td><strong>Level III is the expected level of performance.</strong></td>
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<tr>
<td>The teacher continually facilitates students’ engagement in metacognitive learning, higher-order thinking skills, and application of learning in current and relevant ways. (Teachers rated at Level IV continually seek ways to serve as role models or teacher leaders.)</td>
<td>The teacher consistently promotes student learning by using research-based instructional strategies relevant to the content to engage students in active learning, and to facilitate the students’ acquisition of key skills.</td>
<td>The teacher inconsistently uses research-based instructional strategies. The strategies used are sometimes not appropriate for the content area or for engaging students in active learning or for the acquisition of key skills.</td>
<td>The teacher does not use research-based instructional strategies, nor are the instructional strategies relevant to the content area. The strategies do not engage students in active learning or acquisition of key skills.</td>
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</tbody>
</table>
TAPS Commentary/ Feedback

• Verbatim scripting of teacher or student comments:
  — “Bring your materials for generating and testing hypotheses and report to your cooperative learning group.”

• Non-evaluative statements about observed teacher or student behavior(s):
  — Teacher presented the analogy content from the front of the room.
TAPS Commentary/ Feedback

• **Numeric information about time, student participations, resource use, rigor, etc.:**

  —[9:30 a.m. – 10:00 a.m.] The curriculum standard being taught was a DOK level 3. The students’ assignment on identifying similarities and differences was a DOK level 2.

• **An observed aspect of the environment:**

  —Desks were arranged in groups of four with room to walk between each group and provide feedback.
Defining Rigor
Why Rigor?

- Many high school graduates are unprepared for college.
- Too few high school graduates are getting needed skills and are taking remediation courses in college.
- College readiness translates into work readiness as well;
- Employers say that high school graduates are lacking basic skills;
- Students planning to join the workforce after graduation do not need a less rigorous curriculum—they also need higher order thinking skills;
- Students are not prepared for high school.

Sources: Achieve (2007); ACT (2007); American Diploma Project (n.d.); Cavanaugh (2004); Dyer (n.d.); National High School Alliance (2006); Williamson (2006).
Rigor is not...

• Excessive homework.
• Busy class work.
• For “smart” students only.
• Decreased teacher support.
• A variety of resources.
• Advanced classes.
• Excessive failure rates.
Rigor and Teachers

A rigorous classroom requires active participation from both teachers and students.

Teachers...

- Should push students to not only *know* information but how to *apply* and *demonstrate* understanding.

- Will utilize *strategies* that require reflection, evaluation, problem solving, and analysis.

- Recognize it is the quality of thinking, *not the quantity*, that defines academic rigor.

- Understand increasing rigor adds depth and higher level skills to the activity.
Rigor Is for Every Child

Across the grades, when instruction was challenging, relevant, and academically demanding, then all students had higher engagement and teachers talked less – and the greatest beneficiaries were for the at-risk students.”

John A.C. Hattie, Visible Learning for Teachers: Maximizing Impact on Learning
Guiding Principles for Classroom Rigor

- Provide all students an equal opportunity to be challenged
- Encourage learning from mistakes so students will still feel confident to try new approaches
- Give problems that allow students to find their own solutions (creativity)
- Build conceptual understanding (why) and use non-routine problems
- Allow learners to apply knowledge to different situations and make connections
Reflection on Rigor

Reflect on the quote about how to achieve rigor

Discuss and record real life examples of the words in **Bold** with your group

A reporter from each group should be prepared to share your thoughts with the group

Authentic rigor includes **high expectations** for students, increased **support** for students, and increased **demonstration of learning** by students. All of these aspects lead to the creation of an **environment** that supports learning.

*Rigor Is for Everyone*
Barbara Blackburn Ph.D.
03/30/2013
Possible Reflection Examples

- Relevant learning
- Praise progress and achievement
- Focus on instruction
- Push all students to respond at high levels
- Accountability

- Believe all students can succeed
- Quality and clear feedback (+)
- No assumptions/excuses
- Shown in how and what you teach
- Motivate and engage
- Adequate wait time

- Open ended questions (use standards)
- Scaffolding based on DI
- Investigative process
- Chunking information (graphic organizers)
- Group work
- Integrated application
- Various points of view

Environment
- Motivating
- Student Ownership
- Safety and Security
- Progress and Achievement

High Expectations
- Actions
- Language

Demonstration of Learning
- Each student
- High Expectations

Support for Students
- Scaffold
- Guidance

HOTS!
- Ongoing/Interactive
- Cite evidence/Justify
- Model thinking
- Problem solving
- Technology use
- Student-based
- Used for DI

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Warm Demanders

• Rigorous teachers have qualities of *warm demanders*
  • Promote academic achievement at high levels while developing strong nurturing relationships

• Teachers as *warm demanders*...
  • Encourage critical thinking
  • Align learning goals to standards
  • Adapt to differences in student needs
  • Push student-initiated learning activities
  • Keep and show a positive regard for students

“Rigor-mortis”

https://www.youtube.com/watch?v=iOcYfrZJWi8
In Summary…

Rigor is ensuring each student you teach is provided opportunities to grow in ways he or she could never imagine!
Depth of Knowledge: A Common Language for Rigor
Effective teachers and leaders ask...

How do I measure rigor to determine if the teaching and learning environment are rigorous for every student?
Deeper Learning with DOK

• Deeper learning is a rigorous learning experience.
• It allows students to really dig into a subject.
• Students can understand content in a way that requires more than just memorizing facts.
• DOK, a common language for rigor, helps leaders, teachers, and students to recognize when level of mental complexity is beyond recall.
Expectations and assessments are aligned if what is elicited from students on an assessment is as demanding cognitively as what students are expected to know and be able to do as described in an expectation.
• Depth of Knowledge, or DOK, is based on the 1990s research of Dr. Norman L. Webb.

• All standards and items will have a DOK level.

• DOK is a scale of cognitive demand designed to evaluate and align content standards and their corresponding assessment items.

• DOK is a reference to complexity, not difficulty.
What is DOK?

• It is the kind and level of thinking (complexity) required of students in order to successfully complete an assessment item or task.

• One must consider expectations, grade level/course sequence, student’s prior knowledge, effort, evaluation method, and level of work (standards) when determining DOK levels.

• To help determine cognitive complexity, DOK is about what follows the verb or the object of the verb.
The same verb is used in different contexts at different DOK levels.

- **DOK Level 1** - *Identify* essential information needed to accomplish a task. (Requires simple recall)

- **DOK Level 2** - *Identify* information in a passage that is supported by facts. (Requires cognitive processing)

- **DOK Level 3** – *Identify* the appropriateness of an argument using supporting evidence. (Requires deep understanding)

- **DOK Level 4** – *Identify* interrelationships in more than one literary work. (Requires application of multiple texts)

- **DOK Level 1** - *Explain* how the “vertical line test” is useful in determining whether or not a given graph is representing a function. (Requires simple recall)

- **DOK Level 2** - *Explain* the difference between a linear and a quadratic function. (Requires cognitive processing)

- **DOK Level 3** – *Explain* what family of functions would best model a particular real-world situation. (Requires deep understanding)
What is DOK?

• Remember, verbs are not always appropriately used. Words like explain or analyze have to be considered in context.

• Consider the “intent” of the item because some students could circumvent the DOK level due to their prior knowledge or lack thereof.

• When determining a DOK level for an item or task, consider the general population of students.
Complexity vs. Difficulty

- Difficulty is a reference to how many students answer a question correctly.
- Increasing difficulty adds to students’ efforts without increasing thinking.
- An activity may be increasingly difficult without becoming more complex.

<table>
<thead>
<tr>
<th>Activity “A”</th>
<th>Activity “B”</th>
<th>Increased Complexity or Difficulty? Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a dictionary to write the meaning of your 20 vocabulary words for this week.</td>
<td>Write an essay about a current event using 10 of your vocabulary words in context.</td>
<td>?</td>
</tr>
<tr>
<td>Choose one character in the story you would like to be and explain your choice.</td>
<td>Choose two characters in the story you would like to be and explain your choice.</td>
<td>?</td>
</tr>
<tr>
<td>Label the parts of a plant cell and tell the function of each part.</td>
<td>Describe in your own words how the different parts of a plant cell benefits plants</td>
<td>?</td>
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</tbody>
</table>
## Mental Processing Needed at Each DOK Level

### DOK Level 1
**Recall/Reproduction**

- Memorize simple or complex content, such as facts, terms, details, definitions, principles, and/or properties
- Verbatim recall of who, what, when, and where
- No need to figure or solve; Locate features that don’t transform or greatly vary
- Follow a basic process, directions, or procedures
- Simple understanding of a word or phrase
- Minimal understanding of text, Oral reading
- Apply well known formulas and basic calculation tasks (add, subtract, etc.)
- Demonstrate rote response of clearly defined steps
- One right answer; one step

### DOK Level 2
**Basic Application of Skills/Concepts**

- Act on a central idea/piece of information
- Differentiate among people, places, events, objects, text types, context clues, etc.
- Think through more than one process; Classify and sort into categories; Make connections
- Transfer knowledge and make basic decisions, such as approach to find correct solution
- Explain relationships, such as cause and effect
- Comprehend and process portions of a text, like main idea and basic inference or prediction
- Explanation of how and why; Think and search
- One right answer, two or more steps
## Mental Processing Needed at Each DOK Level

<table>
<thead>
<tr>
<th>DOK Level 3</th>
<th>Strategic Thinking</th>
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</thead>
<tbody>
<tr>
<td>• Must demonstrate (explain) cognitive reasoning</td>
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<tr>
<td>• Provide evidence and/or application to support reasoning, thinking, and/or opinion</td>
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<tr>
<td>• Justify how and why by going beyond text to explain/connect ideas and reach a solution</td>
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<tr>
<td>• Propose and evaluate solutions to real world and usually non-routine problems</td>
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<tr>
<td>• Can utilize multiple sources, and investigation; Often focuses on one task, one data set, etc.</td>
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<tr>
<td>• Integrate knowledge and multiple skills</td>
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<tr>
<td>• Can usually be done in 1-2 class periods</td>
<td></td>
</tr>
<tr>
<td>• Multiple answers; multiple approaches</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>DOK Level 4</th>
<th>Extended Thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Requires high cognitive demand to solve problems with unpredictable solutions</td>
<td></td>
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<tr>
<td>• Involves extended time for deeper thinking, multi-faceted investigations, projects, etc.</td>
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<tr>
<td>• Cannot complete these critical thinking tasks and plans in one sitting (days, weeks, or months)</td>
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<tr>
<td>• Take material from one content and apply it to another content; Make several connections</td>
<td></td>
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<tr>
<td>• New situations with deep awareness, collaboration (often), and great creativity that yield an authentic product</td>
<td></td>
</tr>
<tr>
<td>• Usually uses multiple sources/resources</td>
<td></td>
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<tr>
<td>• Multiple answers; multiple approaches</td>
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</tbody>
</table>
• What distinguishes a DOK 3 from a DOK 4 is the **amount of time** a student needs to complete the task (e.g. a class period vs. a month or more).

• An item or task that requires students to apply, analyze, synthesize, and evaluate criteria based on multiple **sources** in order to determine the best solution could be **DOK Level 3** or **DOK Level 4**.

• The addition of an investigation **with extended time** to gather data from multiple sources to use as evidence of the problem, and adding an implementation plan done over time would make this same task a **DOK Level 4**.
DOK Specifics

• Younger children are capable of performing tasks at DOK Levels 3 and 4.

• Items/tasks written to a higher level will often contain lower level demands.

• Learners do not have to master content with lower level DOK tasks before doing higher level tasks.

• Lower-level tasks that are merely repeated over a period of time are still lower level.
DOK in the Classroom-Math

DOK Level 1: Retrieve information from a table. (Recall)

DOK Level 2: Retrieve information from a table and use it to solve a problem. (Application)

DOK Level 3: Solve a problem in more than one way. Describe and contrast solution methods. Which solution method is best? Explain your reasoning. (Evaluation)

DOK Level 4: Formulate a mathematical model for a complex situation and produce a deductive argument to justify the effectiveness and accuracy of your new model. (Synthesis)
DOK in the Classroom-Science

DOK Level 1: Complete a familiar single-step equation using a reference sheet. (Recall)

DOK Level 2: Describe examples and non-examples of a scientific process. (Comprehension and Application)

DOK Level 3: Analyze an experiment to identify a flaw and propose a method for correcting it. (Analysis and Evaluation)

DOK Level 4: Design an original experiment. Interpret, explain, and solve a problem using this experiment. (Synthesis)
Let’s Practice…What’s the DOK Level?

2

- Identify and summarize the major events in a narrative.
- Use context cues to identify the meaning of unfamiliar words.
- 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.

4

- Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results/solutions.
- Apply mathematical model to illuminate a problem.
- Analyze and synthesize information from multiple sources.
- Describe and illustrate how common themes are found across texts from different cultures.
- Design a mathematical model to inform and solve a practical or abstract situation.
Let’s Practice…What’s the DOK Level?

- Support ideas with details and examples.
- Use voice appropriate to the purpose and audience.
- 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 a concept in other contexts.

1. Recall elements and details of story structure, such as sequence of events, character, plot, and setting.
2. Conduct basic mathematical calculations.
3. Label locations on a map.
4. Represent in words or diagrams a scientific concept or relationship.
5. Perform routine procedures like measuring length or using punctuation.
6. Describe the features of a place or people.
Determining DOK

Is there a right or wrong answer?

Yes. There is usually one answer.

Are students recalling information with minimal understanding?
   DOK 1

Are students transferring and connecting knowledge with a basic understanding?
   DOK 2

No. There are multiple answers/multiple approaches and the item/task is usually non-routine.

Are students demonstrating high cognitive reasoning in 1-2 instructional periods?
   DOK 3

Are students demonstrating deep thinking, creativity, and/or research skills in days, weeks, or months?
   DOK 4
• If the examples and situations in an assessment item/task were taught in class, the DOK level on the assessment item could become Level 1 (recall).

• Many questions seem higher-order when in fact the question was discussed in detail by the teacher. Thus, the question usually becomes a DOK Level 1.

• Assessments should include new examples and situations whenever possible in order to increase the complexity.
Determining the DOK level is based on two factors:

• **Sophistication and Complexity of Standard/Item**
  - Did you consider expectations, effort, and evaluation?
  - How abstract is the activity? Does it look like the class work?
  - What is the degree of simple knowledge and thinking?
  - Is the answer right there or does it go beyond the text and/or involve novel findings?
  - Is there more than one answer? Are there several decision points?

• **Student’s Prior Knowledge of Content**
  - Have students habitually performed the content?
  - Did you consider the grade level or course type/level?
DOK Considers Expectations, Effort, and Evaluation Method

• Comprehension and understanding - DOK 2
• Applying concepts – DOK 1, DOK 2, or DOK 3
• Creating things – DOK 1, DOK 2, DOK 3, DOK 4
• Retell a story in own words – DOK 2
• Design and investigate – DOK 3 or DOK 4
• Describing and illustrating themes across texts – DOK 3
• Inferring, predicting, or interpreting – DOK 2 or DOK 3
• Explain or describe “how” and “why” – DOK 1 or DOK 2
• Justify “how” and why” through evidence or application – DOK 3 or DOK 4
## DOK Ceiling

Defines the highest DOK level for each standard

<table>
<thead>
<tr>
<th>Sample Standard</th>
<th>Potential DOK Levels</th>
<th>DOK Ceiling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solve two step linear equations and inequalities in one variable over the rational numbers, verify the reasonableness of results, and interpret the solution or solutions in the context from which they arose.</td>
<td>DOK Level 1 – Solve two step linear equations, DOK Level 2 – Verify reasonableness of results, DOK Level 3 – Interpret solutions in context</td>
<td>3</td>
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</tbody>
</table>
Operationalizing Rigor with DOK

What does rigor look like in a classroom?

Students should be observed being able to...

• Judge, justify, and evaluate (“jury–ready”).
• Analyze an argument.
• Weigh and consider evidence.
• Recognize bias (their own and others).
• Distinguish fact from opinion.
• Balance and compare competing principles.
• Communicate what is understood.
• Work with others.

Adapted from “Rigor on Trial” Tony Wagner
DOK General Rule of Thumb

If there is more than one solution/approach, requiring evidence, the item is DOK level ____ or DOK level ____?

Answer: DOK Level 3 or DOK Level 4

• DOK 3: Must provide supporting evidence and reasoning (Not just HOW solved, but WHY – explain reasoning)

• DOK 4: All of DOK 3 + Use of multiple sources or texts

Karin Hess, Senior Associate, National Center for the Improvement of Educational Assessment

8/19/2017
DOK General Rule of Thumb

If there is only one correct answer for the item, it is probably DOK level _______ or DOK level ____?

Answer: DOK Level 1 or DOK Level 2

• DOK 1: You either know it (can recall it, locate it, do it) or you don’t

• DOK 2: Apply one concept, then make a decision before going on applying a second concept (conceptual)

Karin Hess, Senior Associate, National Center for the Improvement of Educational Assessment
Reflection

• How can knowledge of DOK be used to increase student learning?

• How can knowledge of DOK impact instructional planning, teaching strategies, and assessment development?

• What is one way you might apply DOK in teacher evaluation conferences (leaders) or in planning meetings (teachers)?
Questions
Practicing with DOK
DOK Practice Activity

• You will be given several examples of standards or items/tasks that represent different DOK levels.

• Using the DOK chart on the next slide, place the standard or item/task number under the correct DOK Level.

• You may work with a partner or your group.

• Let’s get started!
DOK Activity Chart

<table>
<thead>
<tr>
<th>DOK 1</th>
<th>DOK 2</th>
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<table>
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<tr>
<th>DOK 3</th>
<th>DOK 4</th>
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</table>
1. Name the DOK Level Activity

Standard: Students will analyze how changes in technology, costs, and demand interact in competitive markets to change the price of goods.

DOK Level 3/Strategic Thinking:
The expectation in this standard is that students will know the changes, will see the cause and effect of those changes, and then will analyze why these changes have occurred. There is the process of application of understanding of the concepts of supply and demand to a specific time and place through the specific technology, the costs, and demand in the market place.
2. Name the DOK Level Activity

Item: During World War II, the United States experienced many shortages of resources.

A. Identify two shortages the US experienced during World War II.
B. Explain how the US dealt with each shortage you identified in Part A. Use details to support your answer.

DOK Level 2/Skills and Concepts:
More than one step is required here. The student must first identify the resource shortages (Step 1). Next, the student must describe in detail how the US handled each shortage (Step 2).
3. Name the DOK Level Activity

**Standard:** Students will construct two-dimensional patterns for three-dimensional models, such as cylinders and cones.

**DOK Level 2/Skills and Concepts:**
Although recognizing and drawing a two-dimensional pattern, or a regular cylinder, is expected to be routine (Level 1), building a three-dimensional model would not be as routine. It would require at least two steps: first, recognizing the shape and, second, drawing a two-dimensional object to reflect the shape in three dimensions.
4. Name the DOK Level Activity

**Item:** From any vertex of a 4-sided polygon, 1 diagonal can be drawn. From any vertex of a 5-sided polygon, 2 diagonals can be drawn. From any vertex of a 6-sided polygon, 3 diagonals can be drawn. From any vertex of a 7-sided polygon, 4 diagonals can be drawn. How many diagonals can be drawn from any vertex with a 20-sided polygon?

**DOK Level 1/Recall and Reproduction:**
This is not really a geometry pattern. Rather, it simply requires students to notice an easy, routine pattern. This pattern is immediately recognizable and requires no processing. A more complex pattern could make this a DOK level 2 or DOK level 3 item.
5. Name the DOK Level Activity

**Item:** You will now finish a diagram of a food web in the pond. The food web shows what eats what in the pond system. Draw arrows in the diagram below from each living thing to the things that eat it. (The first arrow is drawn for you.)

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**DOK Level 1/Recall/Reproduction:**
Even though this item has multiple steps, the steps are not interrelated and do not increase the item’s cognitive demands. Each step involves only recall.
6. Name the DOK Level Activity

**Standard:** Students will demonstrate understanding of the Earth’s physical environment as a set of interconnected systems by analyzing the ways that humans have perceived, reacted to, and changed environments at the local/or global level and develop a plan to implement a change.

**DOK Level 4/Extended Thinking:**
Students are required to research the necessary data to analyze a specific situation in order to develop a plan to implement change.
7. Name the DOK Level Activity

**Item:** Under our system of checks and balances, how can the Supreme Court limit the power of both the Congress and the President?

a) impeaching public officials.
b) vetoing a law.
c) making appointments.
d) declaring a law unconstitutional.*

**DOK Level 1/Recall and Reproduction:**
This item requires students to recall basic information about how the system of checks and balances prevents the concentration of political power.
On one fine summer's day in a field, a Grasshopper was hopping about in a musical mood. An ant passed by bearing along with great toil an ear of corn he was taking to the nest. The grasshopper invited the ant to sit for a chat with him. But the ant refused saying that "I’m storing up food for winter". “Why don’t you do the same?” asked the ant to the grasshopper. "Pooh! Why bother about winter?" said the Grasshopper; we have got enough food at present." But the Ant went on its way and continued its toil. Finally, when winter came, the Grasshopper found itself dying of hunger, while it saw the ants distributing corn and grain from their storage. Then the Grasshopper understood that... It is best to prepare for the days of necessity.

DOK Activity: Create Possible Learning Experiences (Items/Tasks) at DOK Levels 1-3 Using the Story
Activity: Create Possible Learning Experiences at Different DOK Levels Using the Story

- DOK 1: What were the grasshopper’s actions during the summer?

- DOK 2: How did the grasshopper’s actions differ from the ant’s actions?

- DOK 3: What should the grasshopper have done differently? Explain your reasoning.
Questions
Who has the greatest control over implementing complexity in content?  *The Teacher*

“Teachers must be the primary driving force behind change. They are best positioned to understand the problems that students face and to generate possible solutions.”

James Stigler and James Hiebert
*The Teaching Gap*
Applying DOK to Increase Rigor

- It is common to find tasks that seem to fall in between levels. When in doubt, assign the higher level.
- "Extended time" alone does not make a task Level 4. Lower-level tasks that are merely repeated over a period of time are still lower level.

https://www.youtube.com/watch?v=YXXgloyYFkw
Applying DOK to Increase Rigor

- **DOK levels are not sequential.** Students need not fully master content with Level 1 tasks before doing Level 2 tasks.
  - Teachers should decide how often students should focus on tasks at each level so that students gain the most from the learning opportunities.
  - An item written to DOK 3 will often contain DOK 1 and 2 level demands.

- **DOK levels are also not developmental.** All students, including the youngest children, are capable of strategic and extended thinking tasks.
  - A DOK Level 3 kindergarten task may be a DOK Level 1 middle school task.
### Formats to Increase Rigor

<table>
<thead>
<tr>
<th>Format</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premise-Consequence</td>
<td>Concluding that an idea is true or false because the consequences of it being true or false are desirable or undesirable</td>
</tr>
<tr>
<td>Premise-Conclusion</td>
<td>Identify the correct outcome of a given circumstance</td>
</tr>
<tr>
<td>Analogy</td>
<td>Map the relationship between two items into a different context</td>
</tr>
<tr>
<td>Case Study</td>
<td>Provide analytical items for a single, well-written scenario</td>
</tr>
<tr>
<td>Incomplete Scenario</td>
<td>Respond to what is missing or needs to be changed within a provided scenario</td>
</tr>
<tr>
<td>Problem/Solution Evaluation</td>
<td>Present a problem and a proposed solution; justify if the answer is right or wrong and explain your reasoning</td>
</tr>
</tbody>
</table>
Increasing Item Rigor

- Use introductory materials that allow students to interpret
- Add justification component to item stem
- Incorporate multiple standards into item or task
- Develop an open-ended item
- Connect to real world situations (authentic)
Richard Woods,
Georgia’s School Superintendent
“Educating Georgia’s Future”
gadoe.org

8/19/2017 68
Felipe and Marsha were studying forces and decided to do an experiment. They placed four equally sized blocks made of different materials on an elevated plastic tray. They watched the blocks move down the tray. Their setup is shown below.

Which of the following forces causes the blocks to move down the tray?
A. electric
B. friction
C. gravity
D. magnetic
Felipe and Marsha were studying forces and decided to do an experiment. They placed four equally sized blocks made of different materials on an elevated plastic tray. They watched the blocks move down the tray. Their setup is shown below.

Which block would experience the least amount of friction as it moved down the tray?
A. Ice Block  
B. Sponge Block  
C. Sandpaper Block  
D. Plastic Block
Increasing Rigor: DOK 3

Felipe and Marsha were studying forces and decided to do an experiment. They placed four equally sized blocks made of different materials on an elevated plastic tray. They watched the blocks move down the tray. Their setup is shown below.

How will changing the angle of the tray affect the movement of the blocks down the tray? Be sure your answer addresses the forces that affect the movement of the blocks.

An item written to a DOK 3 often contains DOK 1 and DOK 2 demands.
Steps to Increase Rigor in the Classroom

• Step 1: Pull existing lessons and activities; Consider the standards/curriculum expectations

• Step 2: Organize them by DOK level; Record levels

• Step 3: Determine lessons to transition or eliminate based on the oversaturated and unrepresented levels in your lessons

• Step 4: Adapt and transition oversaturated lessons to new levels and remove repetitive activities

• Step 5: Ensure adaptable lessons now cover a wider scope of DOK
Steps to Increase Rigor in the Classroom

• Step 6: **Establish new activities** to further develop DOK, especially if current activities are not a good fit

• Step 7: **Use the provided question stems** when developing new lessons or adjusting DOK levels

• Step 8: **Plan with revised activities** to increase rigor

• Step 9: Give students an opportunity to explore DOK in lessons, which will lead to a greater learning impact that allows students to rise
Increasing Rigor

Rigor Checklist

- Process academic ideas in writing
- Discuss ideas using technical vocabulary
- Ask at least five how/why questions per day
- Consistently give evidence for answers (students)
- Read challenging text and answer text-dependent questions
- Develop and improve their own and classmates’ initial answers (students)
- Do cognitive work (writing, reading, problem solving) for at least half of the lesson
DOK 1

- 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___?

DOK 1 Possible Activities

- Fill-in-the-blank tasks
- Recite-math facts, poems
- Locate points on graph
- Edit sentences
- Identify/write sentences
- Highlight key words
- Bookmark websites
- Follow steps/direction
- Show & Tell, Record data
- Locate or recall quotes
- Brainstorm related ideas
- Represent math relationships in words or pictures
- Identify parts of speech
- Label parts in diagram
- List related parts or kinds
DOK 2 Question Stems

- 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 ____?

DOK 2 Possible Activities

- Sequence a chain of events or details
- Write a summary/informational report
- Develop an outline of central ideas/details
- Develop a concept map or process diagram showing relationships
- Construct model to demonstrate how it looks/works
- Make a diorama to illustrate/explain
- Make a topographic map using data
- Make a puzzle or game about the topic
- Complete complex recognition tasks about concepts
- Complex calculation tasks involving decision points
- Identify appropriate strategies/sources for conducting research projects that involve locating, collecting, and organizing
- Create basic questionnaire or survey
- Organize data into graphs
DOK 3

- 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___?

DOK 3 Possible Activities

- Analyze results of a survey
- Write a letter after evaluating a product
- Prepare for and participate in a debate
- Use evidence to generate criteria for making judgments
- Discuss differing viewpoints on...
- Prepare a speech to support your perspective...
- Explain and apply abstract concepts to real-world situations
- Solve complex, non-routine problems that draw upon multiple skills
- Write an essay, short story, poem, or play
- Create complex graphs/databases where data reasoning is not obvious
- Design, conduct, or critique an investigation to answer a question
- Propose an alternate solution
DOK 4

- 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.

DOK 4 Possible Activities

- Applying information from more than one discipline to solve ill defined problems in novel or real situations
- Research tasks that involve generating questions, formulating, and testing
- Tasks that require making multiple strategic and procedural decisions as new information is processed
- Tasks that require multiple roles and collaboration with others (script writing, editing, acting, etc.)
- Tasks that draw evidence from multiple sources to support conclusions
- Conducting internship where students are faced with unpredictable problems
- Organizing/conducting a service project
DOK Question Stems for Eliciting Thinking at Different DOK Levels

DOK Level 1:
- How can you find the meaning of ________?
- Who wrote________________?

DOK Level 2:
- How would you classify the type of ________?
- What can you say about______________?

DOK Level 3:
- What conclusion can be drawn from these three texts ________?
- What is your interpretation of this text? Support your rationale.

DOK Level 4:
- Create a composition using instruments or voice of your choice.
- How could the playwright change the character’s actions to foreshadow ________?
Raise the Rigor: Reading

DOK Level 1: Recognize the correct order of events in a story. (Recall)

DOK Level 2: Determine the major details of the story. How do they support the main idea? (Comprehension and Application)

DOK Level 3: Describe the author’s purpose and how it impacts the text. (Analysis)
Raise the Rigor: ELA

DOK Level 1: Listen to a story. Identify who was in the story and where it took place. (Recall)

DOK Level 2: Read a story. Describe the characters, setting, and plot on the provided chart. Compare and contrast the main characters. (Comprehension and Application)

DOK Level 3: Read a story. Use the elements of this story to make up a new story. (Analysis)
Raise the Rigor: Math

DOK Level 1: Solve a one step problem computing the sum. (Recall)

DOK Level 2: Solve a routine problem requiring multiple operations. (Application)

DOK Level 3: Provide a mathematical justification for the solution of a non-routine problem. (Evaluation and Analysis)

DOK Level 4: Formulate an original problem for a non-routine situation after an investigative process. (Analysis and Synthesis)
Raise the Rigor: Science

DOK Level 1: List animal adaptations explained in an article. (Recall)

DOK Level 2: Complete a chart with examples of animal adaptations based on chapter on birds. Determine relationship between structure and function for adaptations of one bird. (Comprehension and Application)

DOK Level 3: Contrast different structures of a bird. Decide which structures are most essential to the bird’s survival in its habitat. (Evaluation)

DOK Level 4: Design a bird to live in a challenging habitat, explaining the reasons for the adaptations. Make the bird using the materials provided. (Synthesis)
# Raise the Rigor: Social Studies

<table>
<thead>
<tr>
<th>DOK Level 1: Name the presidents of the US in order. (Recall)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOK Level 2: Using the left and right political continuum, categorize the presidents of the 20th and 21st centuries according to their political standing. (Comprehension and Application)</td>
</tr>
<tr>
<td>DOK Level 3: Hypothesize how Dwight D. Eisenhower would react to today’s world political situation. (Evaluation)</td>
</tr>
<tr>
<td>DOK Level 4: Analyze the strategies and effectiveness of George Bush’s war strategies in the Persian Gulf with the war strategies of George W. Bush in Iraq. (Analysis and Synthesis)</td>
</tr>
</tbody>
</table>
Rigor in Math

- Write or draw about concepts
- How concepts are similar and/or different
- Justify why an answer makes sense mathematically
  - Builds metacognition
  - Explores abilities, attitudes, and feelings
- Connect problem/answer to real world situation(s)
  - Create a short story, poem, etc.
- Math Journals
  - Record evidence of student thinking
  - Provide ongoing assessment opportunity
Combining Math and Writing for Rigor

• Allow for collaborative, independent, and guided writing
• Teacher should write with students
• Have students share their writings
• It’s about what they write, not always about how they write
• Celebrate and publish math writings
• Writing lets students reflect on their work
  • What would you tell Sarah to help her understand this problem?
Strategies to Raise the Rigor

13 Essential Strategies
- Identifying Critical Content
- Previewing New Content
- Organizing Students to Interact with Content
- Helping Students Process Content
- Helping Students Elaborate on Content
- Helping Students Record and Represent Knowledge
- Managing Response Rates with Tiered Questioning Techniques
- Reviewing Content
- Helping Students Practice Skills, Strategies, and Processes
- Helping Students Examine Similarities and Differences
- Helping Students Examine Their Reasoning
- Helping Students Revise Knowledge
- Helping Students Engage in Cognitively Complex Tasks

How To Add Rigor To Anything
TeachThought.com

1. Necessitate a transfer of understanding
2. Require students to synthesize multiple sources
3. Design tasks with multiple steps that build cognitively
4. Use divergent perspectives
5. Use divergent media forms
6. Break away from content-area convention
7. Require design thinking (often in PBL)
8. Require long-term observation or analysis
9. Study nuance
10. Require students to take and defend positions

Robert J. Marzano and Michael D. Toth, 2014
Adding Rigor to Instruction

- Setting Objectives and Providing Feedback
  - Supports intent of learning and corrects errors through meaningful communication

- Reinforcing Effort and Providing Recognition
  - Connects belief to action and has ability to change student’s belief about self

- Cooperative Learning
  - Reinforces problem-based learning and performance tasks while reinforcing communication skills

- Cues, Questions, and Advance Organizers
  - Encourages curiosity and presses prior knowledge and critical thinking

- Nonlinguistic Representation
  - Enhances recall through visual and action learning, such as graphic organizers

Adding Rigor to Instruction

Summarizing and Note Taking
• Demonstrates understanding and analysis and shows misconceptions

Homework and Practice
• Allows for application of knowledge and comprehension by repeating skills for mastery

Identifying Similarities and Differences
• Links new learning to prior knowledge using compare and contrast, classify, metaphor, analogies, etc.

Generating and Testing Hypothesis
• Problem solving through evaluating and creating

Marzano’s Four Question Types to Increase Rigor

• **Dr. Marzano** has identified four types of question that can be tailored to provide support and/or to require more complex thinking.

• Students need *exposure to all four question types* in order to integrate and understand new content
  1. Detail Questions
  2. Category Questions
  3. Elaborating Questions
  4. Evidence Questions
Marzano’s Four Question Types to Increase Rigor

1) Detail Questions: Asking questions about important details and giving examples. The level of cognition tends to be recall or basic comprehension. Questions start with words like what, where, which, how many, or when.

(DOK 1 or DOK 2)
Marzano’s Four Question Types to Increase Rigor

2) Category Questions: Students describe general characteristics or compare and contrast. For example, the teacher may ask students to describe and compare what they saw in the animal cell with what they saw in the plant cell.

✓ To work in higher complexity, students must identify the most significant difference and assign weight to it using evidence, which requires deeper thinking.

(DOK 2 or DOK 3)
Marzano’s Four Question Types to Increase Rigor

- 3) Elaborating Questions: Require students to make inferences, speculate, and make projections. Students integrate the new content with their prior knowledge to explain a reason for something.
  - To increase the level of rigor, a teacher may require students to draw a conclusion and support it with evidence.
  - For example, the teacher may ask, “How might this situation have been different if Event A had occurred before Event B?”

(DOK 2 or DOK 3)
4) Evidence Questions: Identify sources and examine reasoning. These can be a natural extension of the other question types. Students identify sources that support their elaborations or examine their reasoning.

☑ To encourage deeper thinking and to rule out more basic explanations, the teacher may restrict the conclusions that students are permitted to draw.

(DOK 3 or DOK 4)
Let’s Practice…What’s the DOK Level of the Questions?

- How or why would you use...?
- What examples/non-examples can you find to...?
- How would you organize_ to show...
- How could you show your understanding of... ?
- What approach/tools would you use to...
- How would you apply what you learned to develop... ?
- What other way could you solve/find out...?

- What are the possible design flaws in...
- What is the theme/the lesson learned... ?
- How would the theme change if...?
- What underlying bias is there... ?
- What inferences will these facts support... ?
- How does the author create tension/suspense...?
- What is the author’s chain of reasoning or point of view for...?
Let’s Practice…What’s the DOK Level of the Questions?

- What is the impact on the reader for use of this visual image?
- What conclusions can you draw ... ?
- How can you prove that your solution or estimate is reasonable?
- What evidence can you find to support ... ?
- What ideas justify this position ... ?

- How would you evaluate the works by this author over time?
- Can you formulate and test a conjecture for...?
- Can you predict the potential benefits and drawbacks if this law does/does not pass?
- Can you construct a model that would change...?
- Can you think of an original way to apply... ?
- How would you prove ...? disprove...?
- Can you assess the value or importance of...?
- What can be learned about this time in history from reading and analyzing various cultural, political, and social perspectives?
Increase the Rigor Map Activity

• Examine the DOK Level 1 item below. Change the item to increase the depth and rigor using ideas discussed today. You may work with a partner. Please be prepared to share your newly created item.

Using a blank map of the United States, write down and correctly spell all 50 states.
Possible Answer for Increase the Rigor Map Activity

Collaboratively design and create a presentation focusing on one of the major events in America's history that have affected and/or played a significant role in our current 50 state structure. Be prepared to present this to your classmates and be able to justify/explain why this particular event was so significant in America's history.
DOK Activity: The Fork

Study the picture of a fork below. Using the four levels of DOK, create four assessment items/tasks about a fork. There should be one item/task for each DOK level. Consider the mental processing needed at each level of DOK when creating items/tasks.
Possible Items for DOK Fork Activity

• DOK Level 1: Examine the picture below. What is this utensil?

• DOK Level 2: What are the differences between a fork and a spoon?

• DOK Level 3: What types of food are best eaten with the utensil in the picture above? Justify your answers.

• DOK Level 4: Design and implement an investigation to determine the optimal number and length of tines needed for a salad fork.
Increase the Rigor Pledge Activity

• Read the Pledge of Allegiance below. Create items or tasks based on the Pledge at each DOK level (1-4). As the DOK level increases, the depth and rigor of each item should increase. Use ideas and formatting discussed today to create your items/tasks. You may work with a partner. Please be prepared to share your newly created items/tasks.

The Pledge of Allegiance

I pledge allegiance to the flag of the United States of America and to the Republic for which it stands, one nation under God, indivisible, with liberty and justice for all.
Increase the Rigor Pledge Activity: Possible Items/Tasks

- Say the pledge.
- Summarize the meanings of indivisible, liberty, and justice.
- Describe the purpose of the pledge and assess how well it achieves that purpose. Suggest improvements.
- Describe the distinctions between allegiance to the flag vs. allegiance to the republic for which it stands. Explain your reasoning.
- Write a detailed contract between yourself and a friend that includes an allegiance to a symbol that stands for something you both believe in.

DOK 1
DOK 2
DOK 3
DOK 4
Curricular Elements of DOK Level 1

### POSSIBLE PRODUCTS

<table>
<thead>
<tr>
<th>Quiz</th>
<th>Definition</th>
<th>Fact</th>
<th>Worksheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test</td>
<td>Label</td>
<td>List</td>
<td>Workbook</td>
</tr>
<tr>
<td>Reproduction</td>
<td>Vocabulary Quiz</td>
<td>Recitation</td>
<td>Example</td>
</tr>
<tr>
<td>Collection</td>
<td>Explanation</td>
<td>Show and Tell</td>
<td>Outline</td>
</tr>
<tr>
<td>Blog</td>
<td>Wiki</td>
<td>Podcast</td>
<td>Categorizing/Tagging</td>
</tr>
<tr>
<td>Commenting</td>
<td>Bulleting</td>
<td>Highlighting</td>
<td>Social networking</td>
</tr>
</tbody>
</table>
## Curricular Elements of DOK Level 2

### Possible Products

<table>
<thead>
<tr>
<th>Photograph</th>
<th>Illustration</th>
<th>Simulation</th>
<th>Sculpture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstration</td>
<td>Presentation</td>
<td>Interview</td>
<td>Performance</td>
</tr>
<tr>
<td>Dairy</td>
<td>Journal</td>
<td>Mind Maps</td>
<td>Blog Commenting</td>
</tr>
<tr>
<td>Blog Reflecting</td>
<td>Moderating</td>
<td>Validating</td>
<td>Linking</td>
</tr>
</tbody>
</table>

Karin Hess, 2009
## Curricular Elements of DOK Level 3

### POSSIBLE PRODUCTS

<table>
<thead>
<tr>
<th>Graph</th>
<th>Spreadsheet</th>
<th>Checklist</th>
<th>Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outline</td>
<td>Survey</td>
<td>Database</td>
<td>Mobile</td>
</tr>
<tr>
<td>Abstract</td>
<td>Report</td>
<td>Debate</td>
<td>Panel</td>
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<tr>
<td>Report</td>
<td>Evaluating</td>
<td>Investigation</td>
<td>Conclusion</td>
</tr>
<tr>
<td>Program</td>
<td>Film</td>
<td>Animation</td>
<td>Video cast</td>
</tr>
<tr>
<td>Podcast</td>
<td>Publishing</td>
<td>Wiki-ing</td>
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</tr>
</tbody>
</table>
Curricular Elements of DOK Level 4

<table>
<thead>
<tr>
<th>POSSIBLE PRODUCTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film</td>
</tr>
<tr>
<td>New Game</td>
</tr>
<tr>
<td>Story</td>
</tr>
<tr>
<td>Song</td>
</tr>
<tr>
<td>Project</td>
</tr>
<tr>
<td>Newspaper</td>
</tr>
<tr>
<td>Plan</td>
</tr>
<tr>
<td>Media Product</td>
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Karin Hess, 2009
Rigor and DOK Connection

- **Rigor** is the expectation that students will be able to perform at the levels of cognitive complexity (DOK) necessary for proficiency of each standard and each academic level.

- Alignment of instruction and assessment with standards/objectives that are at those levels of cognitive complexity is a critical part of increasing rigor in schools.

- Typically, the gap between the levels of cognitive complexity in the standards and the levels in assignments increases as students progress through grade levels.
Rigor Activity: Best Practices to Increase Rigor

• Consider your school system and local school expectations

• Develop a set of “Nine Best Practices” for promoting academic excellence through rigor in the classroom

• Be specific in describing your strategies

• Work with a partner to find common practices and develop one list

• Compare all lists in the group to create one list
Rigor Activity: Possible Best Practices for Rigor

- **Writing (journals, varied levels of writing, writing across the curriculum, etc.)**
- **Oral communication (debates w/expert judges, summary presentations, role playing)**
- **Reading/comprehension (reading and analyzing, in-class discussions, quizzes, summaries, etc)**
- **Collaborative group projects**
- **In-class small group discussion and report findings (think-pair-share)**
- **Socratic method/interactive discussion**
- **Providing a detailed, clear lesson plan with student objectives; grading rubrics, calendar, etc.**
- **Use technology to enhance efficiency of content delivery, engage students**

Knowing your students (contact, interaction, praise, showing interest, meeting w/students)
Motivating Students to Succeed when the Rigor Increases
Why is Motivating Students Important?

Motivated and engaged students...

- Are less likely to disrupt.
- Earn higher grades.
- Feel more confident about learning.
- Are willing to accept challenges.
- Retain information longer.
- “Are more likely to become life long learners.”

*Brewster, 2000*
“The key is that we can develop in students that inner drive, that motivation for them to make the most out of those learning experiences.”

Eduardo Briceño, CEO
Mindset Works, a non-profit started by Stanford Professor Carol Dweck
Helping Students Succeed with Increased Rigor

• Teachers can increase motivation by showing students they have a chance for success. How?

• Use the following motivational and teaching elements when applying increased rigor in class:
  ✓ Success
  ✓ Value
  ✓ Engaging instructional strategies
Student Success and Rigor

• **Success builds self-confidence**, which encourages students to try something else and gain further success.

• Scaffolding and other effective strategies can increase students’ academic performance and build success.

• Teachers should track **student progress and achievement**.
Student Value and Rigor

• Rigor is directly connected to relevance. That is the value part of motivation.

• Students are considering the importance of each activity when learning. They may ask themselves...
  • What am I Learning?
  • Why am I learning it?
  • How will I use it?

• Teachers can use **authentic methods** so students recognize the connection between class knowledge and real life.
Student Cognitive Engagement and Rigor

• Students should be **actively involved** and participating in the lesson, which promotes motivation.

• The teacher **and** the student must participate in the learning process for true engagement.

• For higher engagement, students should raise questions, solve problems, analyze, apply, synthesize, evaluate, and/or create and engage with classmates regarding content.

• Leaders and teachers should have a data collection method for gathering information about student engagement.
Leading a Rigorous Classroom
• We are going to talk about how it is the ultimate responsibility of the teacher to create rigor in the classroom. (Leaders create rigor school wide.)

• Reflect on this topic for one minute.

• Then write down what comes to mind when you think about how you create rigor in your classroom.

• After the presentation, review your list and see if your thoughts were mentioned.

• You are welcome to share your thoughts about creating rigor school wide at the end of the presentation.
As the teacher...

Encourage a Growth Mindset

**FIXED MINDSET**
- Intelligence is innate and unchangeable
- Focus on performance
- Effort means you’re not very smart
- Avoid failure at all costs

**GROWTH MINDSET**
- Intelligence is malleable with effort
- Focus on learning
- Effort is a natural part of the learning process
- Failure is a temporary setback that provides feedback for learning

Carol Dweck, 2006
Growth Mindset Cycles

Challenge or Failure → Growth Mindset

Growth Mindset → Increase Effort & Strategies → Higher Achievement

Higher Achievement → Growth Mindset

Growth Mindset → Fixed Mindset

Fixed Mindset → Reduce Effort & Withdraw

Reduce Effort & Withdraw → Lower Achievement

Lower Achievement → Fixed Mindset

Challenge or Failure
Growth Mindset Strategies for Teachers and Leaders

• Discuss the brain and how it changes with practice – whatever you focus attention on repeatedly changes your brain

• Debunk myths about intelligence: “No such thing as a math brain”

• Emphasize there are strategies for learning the material

• Share stories and examples of famous people who invest a lot of effort, which is essential for success
Creating Rigor in Your Class

• Know the standards!

• Identify how a concept was introduced in the previous grade or subject level, and how it will be used in the next grade or subject. (Vertical Alignment)

• Develop similar expectations for students in different content areas.

• Keep the activities and assignments in all courses active, engaging, and student-centered.

• Ensure students learn, do, and reflect daily. (TAPS)
Creating Rigor in Your Class

• Evidence of rigor is illustrated in certain skills that require students and teachers to think.

• Expect all students to be clearly taught and show mastery of the essential components of rigor:
  • Critical thinking/Problem solving
  • Creativity
  • Collaboration
  • Integration
  • Project management/Responsibility
  • Relevance
  • Written and oral communication
Creating Rigor School wide

- Recognize there is no single way to increase rigor. It requires constant changing, learning, modifying, adjusting and overcoming obstacles.

- Ask the following questions of yourself:
  - What can I substitute, change, improve upon to make this better?
  - How can I overcome mistakes and be successful?
Four Key Beliefs for Students in a Rigorous Environment

To develop a positive academic mindset, there are four key beliefs students must hold:

- *I can change my intelligence and abilities through effort*
- *I can succeed*
- *I belong in this learning community*
- *This work has value and purpose for me*

- With these **beliefs and learning strategies** for effective self-management, any student can be successful.

- Schools can design themselves in different ways to create deeper learning experiences and outcomes.

Eduardo Briceño, CEO of Mindset Works
Reflection Questions

What is the greatest challenge you face in addressing the increase in rigor and how might you tackle it?

What are the benefits of increasing rigor in instruction and assessment?

How can you ensure alignment between the standards, instructional practices, resources, and formal/informal and formative/summative questioning/assessments?

How are high expectations for student achievement conveyed to students? What do these expectations look like in instructional practice? How are the expectations monitored?

Can your students articulate academic expectations in each class and do they know what they are expected to do to achieve proficiency? How do you know?
Reflecting with Round Robin Brainstorming

• When we talk about the reflection questions, what comes to mind for at least one of the questions?

• In round-robin fashion, each person will share at least one thought.

• If you have nothing to add yet, you can pass and we will return to you later.

• After everyone shares for the first time, anyone may add comments.
TAKE AWAY!

• DOK gives you a framework and common language to support rigor in every classroom.

• All DOK levels are necessary in a rigorous classroom.

• Regardless of how you define "rigor," the important thing is that all students are thinking deeply daily.

• Foster learning that encourages students to solve complex items, connect ideas, activate prior knowledge, and draw conclusions.

• Classroom rigor begins with the teacher. School wide rigor begins with the principal.
Redesigned Teacher Resource Link  #GATeacherResources

One-stop shop for teachers!

How can teachers access the Redesigned TRL?

Teachers access the Redesigned Teacher Resource Link by clicking on the TRL tab within SLDS.

Richard Woods, Georgia’s School Superintendent
“Educating Georgia’s Future”
gadoe.org

More than 28,000 K-12 downloadable resources

Essential Toolkit K-5 resources includes:
curriculum maps, frameworks, glossaries, and teacher guidance documents

Instructional resources align to state standards & focus on grade level or resource type

User-friendly search menu, filtered resources to store, save, & share.

COHERENT INSTRUCTIONAL RESOURCES
CONTENT
QUALITY
SHOPPING CART OF RESOURCES

7/1/2017
Please complete the survey at the link below. Thank you for allowing me the opportunity to serve you. It was my pleasure.

https://www.surveymonkey.com/r/S3DW3HG
Describing DOK Levels: Summary Slides
Recall/Reproduction

DOK Level 1

<table>
<thead>
<tr>
<th>Basic problem or task</th>
<th>Facts, terms, or properties of objects</th>
<th>Simple routine procedures or well known formulas</th>
<th>Either you know it or you don’t</th>
<th>One right answer and one step</th>
</tr>
</thead>
</table>

8/19/2017
DOK 1: Recall/Reproduction

Samples

• Recall elements and details of story structure, such as sequence of events, character, plot, and setting.
• Conduct basic mathematical 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.
• Describe the features of a place or people.

Skills and Concepts

<table>
<thead>
<tr>
<th>DOK Level 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Idea and Inference; Deeper than definitions</strong></td>
</tr>
<tr>
<td><strong>Formulate routine problem and decide how to solve it</strong></td>
</tr>
<tr>
<td><strong>Interpret and organize data with simple graphs; Explain relationships</strong></td>
</tr>
<tr>
<td><strong>One right answer and usually involves two or more steps</strong></td>
</tr>
</tbody>
</table>
## DOK 2: Skills and Concepts

### Samples

- Identify and summarize the major events in a narrative.
- Use context cues to identify the meaning of unfamiliar words.
- 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.
# Strategic Thinking

## DOK Level 3

<table>
<thead>
<tr>
<th>Complex or abstract thinking with analysis and evaluation</th>
<th>Apply knowledge or skills in a new and unique situation</th>
<th>Often requires students to justify answers; Multiple sources</th>
<th>Usually more than one correct response or approach</th>
</tr>
</thead>
</table>

8/19/2017
DOK 3: Strategic Thinking

Samples

- Support ideas with details and examples.
- Use voice appropriate to the purpose and audience.
- 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 a concept in other contexts.

### Extended Thinking

#### DOK Level 4

<table>
<thead>
<tr>
<th>Complex problems with a high cognitive demand</th>
<th>Solve real-world problems; Investigation over time</th>
<th>Connect multiple content areas and sources</th>
<th>Multiple solutions and steps</th>
</tr>
</thead>
</table>

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# DOK 4: Extended Thinking

## Samples

- Conduct a project that requires specifying a problem, designing and conducting an experiment, analyzing its data, and reporting results/solutions.
- Apply mathematical model to illuminate a problem.
- Analyze and synthesize information from multiple sources.
- Describe and illustrate how common themes are found across texts from different cultures.
- Design a mathematical model to inform and solve a practical or abstract situation.
DOK Four Minute Video

DOK Resources

DOK by Content Area
http://facstaff.wcer.wisc.edu/normw/

Webb’s Alignment Tool
http://www.wcer.wisc.edu/WAT/index.aspx

Survey of the Enacted Curriculum
http://www.SECsurvey.org