

Coaching for Rigor



Curriculum Coordinator Meeting Fall ILC 2013

Rachael Parham, Reading Director, Maui
Michelle Strauser, Reading Director, Maui
Lilette Wheatman, Reading Director, Big Island

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Outcomes

- **Raise** rigor in classrooms through an understanding of Depth of Knowledge
- **Develop** an understanding of Webb's Depth of Knowledge
- **Explain** how DoK impacts instruction

How do you define RIGOR?

- As a table, on the sticky notes provided, **define rigor**.
- Reflect on the following questions:
 - What is the difference between a learning task that is rigorous and one that is challenging?
 - How do you know when learning is rigorous for students?



What is Rigor?

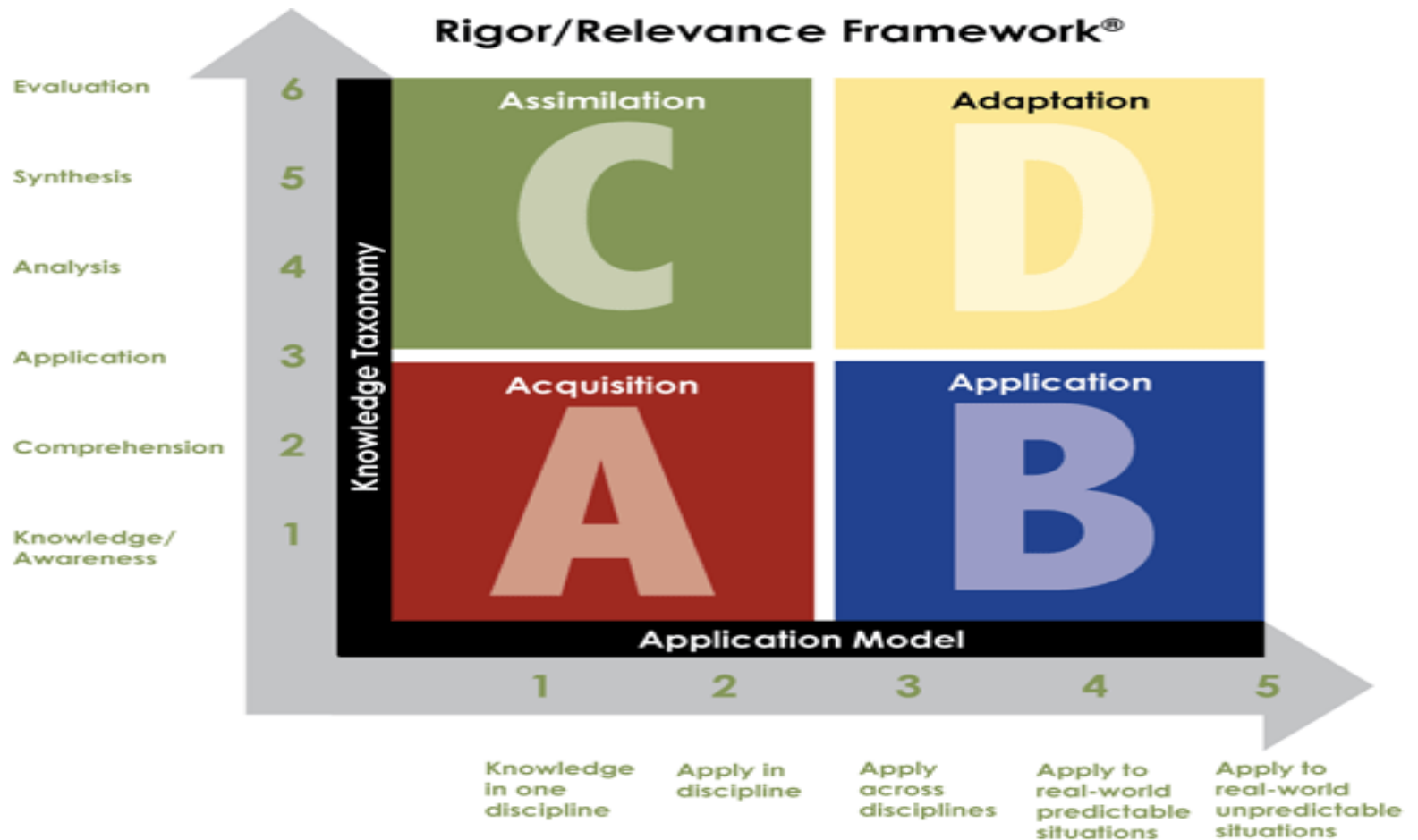
- Rigor is the goal of helping students develop the capacity to understand content that is complex, ambiguous, provocative and personally or emotionally challenging.

Teaching What Matters Most: Standards and Strategies for Raising Student Achievement by Richard W. Strong, Harvey F. Silver and Matthew J. Perini, ASCD, 2001

What is Rigor?

- “Learning is optimized when students are involved in activities that require complex thinking and the application of knowledge.”
 - *Hess, Carlock, Jones, & Walkup, 2009*

Rigor/Relevance Framework®

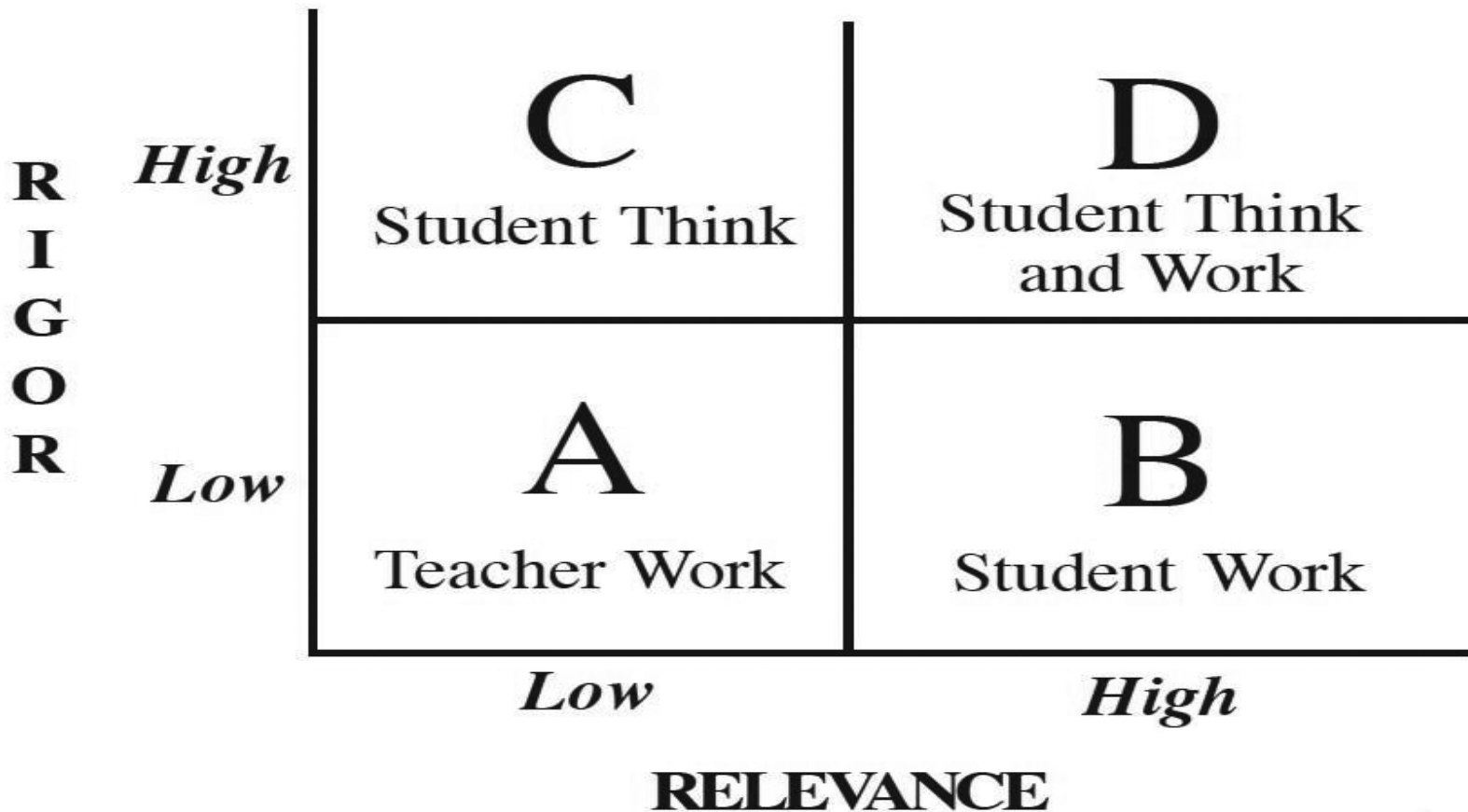


A	B	C	D
Students gather and store bits of knowledge and information. Students are primarily expected to remember or understand this knowledge.	Students use acquired knowledge to solve problems, design solutions, and complete work. The highest level of application is to apply knowledge to new and unpredictable situations.	Students extend and refine their acquired knowledge to be able to use that knowledge automatically and routinely to analyze and solve problems and create solutions.	Students have the competence to think in complex ways and to apply their knowledge and skills. Even when confronted with perplexing unknowns, students are able to use extensive knowledge and skill to create solutions and take action that further develops their skills and knowledge.

<http://www.leadered.com/rrr.html>

Rigor/Relevance Framework

Teacher/Student Roles



www.LeaderEd.com

DOK (Depth of Knowledge)

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.

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 or approach is often possible.

Level 1: Recall

- ▣ A. Focus is on specific facts, definitions, details, or using routine procedures (measure, divide, follow recipe, etc.)
- B. Explaining "that..."
- C. 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 work situation)
- D. Combination of level ones does NOT = level 2.
- E. One right answer



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

BLOOM'S TAXONOMY

KNOWLEDGE / REMEMBERING

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

COMPREHENSION / UNDERSTANDING

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

APPLICATION / APPLYING

"Using information in another familiar situation."

ANALYSIS / ANALYSING

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

SYNTHESIS and EVALUATION / EVALUATING and CREATING

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

WEBB'S DOK

RECALL

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

SKILL/CONCEPT

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

STRATEGIC THINKING

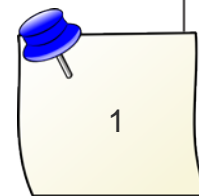
Requires reasoning, developing a plan or sequence of steps; has some complexity; more than one possible answer

EXTENDED THINKING

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

Wyoming School Health and Physical Education Network (2001). *Standards, Assessment, and Beyond*. Retrieved May 25, 2006, from <http://www.wyo.edu/wyhsenet>

	Level 1	Level 2	Level 3	Level 4
<i>Elementary Interdisciplinary</i>	List the ingredients of a peanut butter and jelly sandwich.	Collect the ingredients for a peanut butter and jelly sandwich and write the recipe.	Investigate how many people are coming to dinner and formulate the appropriate amounts of ingredients for 8 people.	Design a plan to feed the entire class using the following information: one jar of peanut butter makes 10 sandwiches, one jar of jelly serves 8, and one loaf of bread contains 18 slices.
<i>Middle School Science</i>	Define the following terms: electrical generator, electrical motor, magnetic field, and electrical current	Compare and contrast how an electrical motor operates to how an electrical generator operates.	Design and conduct an experiment to demonstrate that electrical currents produce magnetic forces.	Research and design a system to lift heavy objects using the conversion of electrical energy to mechanical energy. Build a prototype of the system using materials found in the classroom.
<i>U.S. History</i>	Name the U.S. presidents in order.	Using the left and right political continuum, categorize the presidents of the 20 th and 21 st centuries according to their political standing.	Hypothesize how Dwight D. Eisenhower would react to today's world political situation.	Analyze the strategies and effectiveness of George H. W. Bush's war strategies in the Persian Gulf with the war strategies of George W. Bush in Iraq.
<i>High School Music</i>	Name several composers from the Baroque and Classical periods.	Describe differences between the Baroque and Classical periods.	Critique, compare, and contrast pieces of music from the Baroque and Classical periods.	Choose a period and develop a 16 measure piece of music from that style.



http://rpd.net/pdfs/ShopTalk%20PDF/ShopTalk_Spr_09.pdf

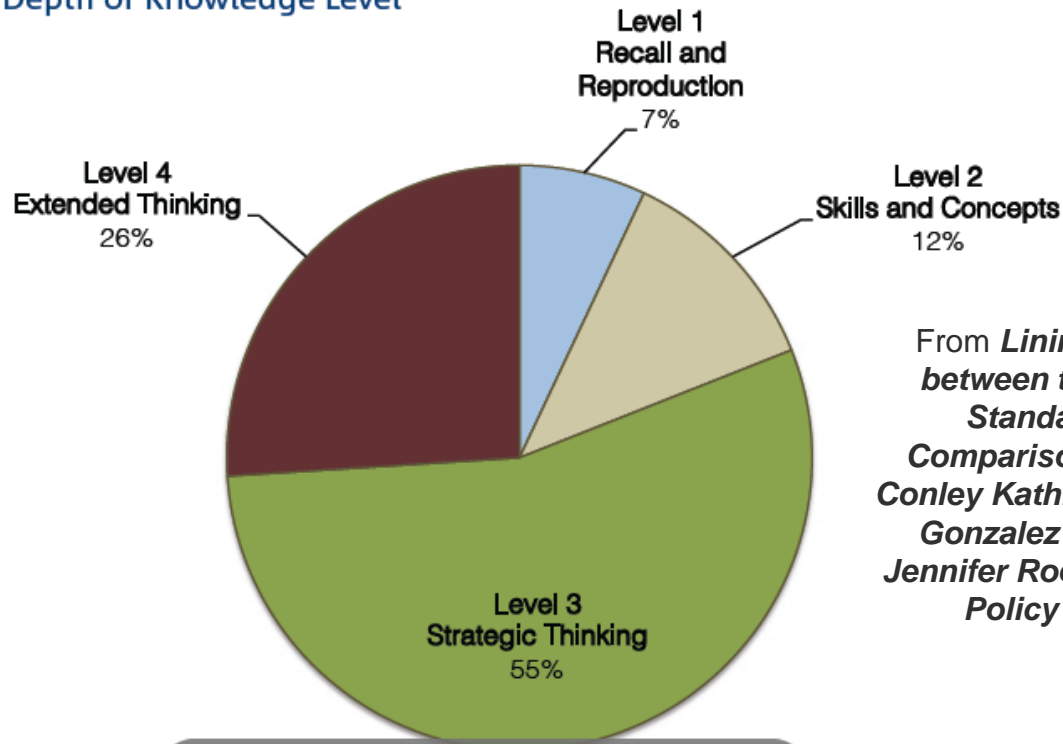
Evaluating Rigor: Activity

- Use the Cognitive Rigor Matrix in your participant's packet to evaluate the level of each task.
- With a partner, sort the cards according to where each task falls within Depth of Knowledge Matrix.
- Once completed, discuss why you and your partner(s) determined these cards fell within these DoK levels. Reflect upon how each task would look if the rigor were raised or lowered.



Reference standard number ^a	Standard	DOK rating
3	Writing Standards	3
3.1	<i>Text Types and Purposes</i>	3
3.1a	1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	3
3.1b	a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences claim(s), counterclaims, reasons, and evidence.	3
3.1c	b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.	4

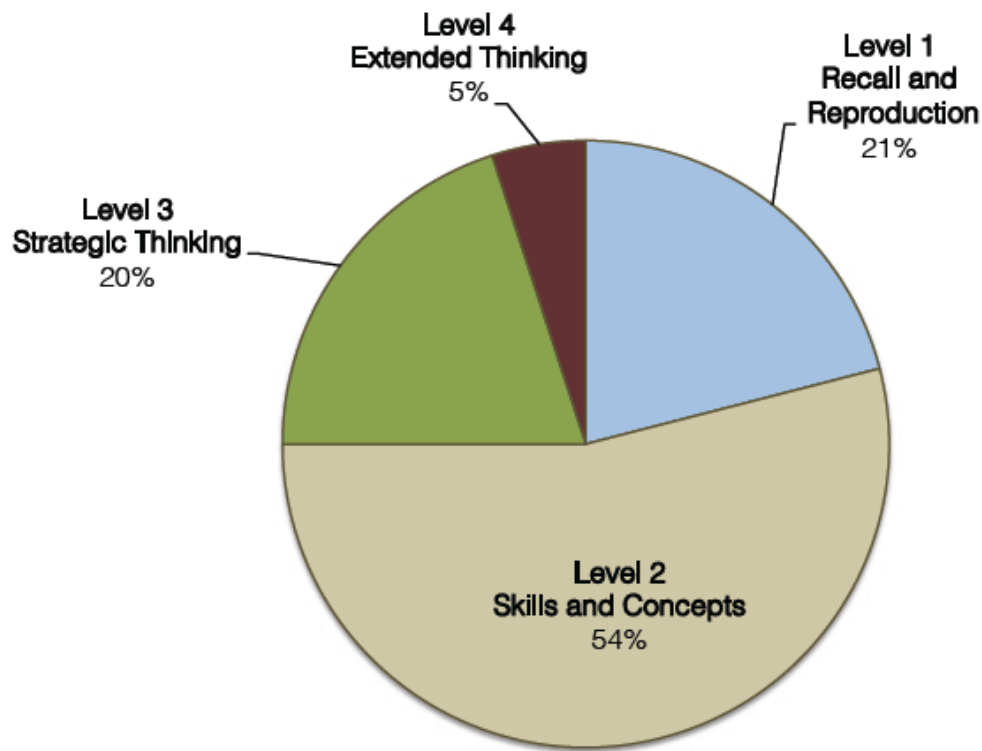
Figure 8. Percent of Common Core ELA and Literacy Standards at each Depth of Knowledge Level



From *Lining Up: The Relationship between the Common Core State Standards and Five Sets of Comparison Standards* by David T. Conley Kathryn V. Drummond Alicia de Gonzalez Mary SeburnOdileStout Jennifer Rooseboom2011 Educational Policy Improvement Center

Reference standard number ^a	Standard	DOK rating
3.4d	c. (+) Compose functions. <i>For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time.</i>	3
3.4e	2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	3
3.5	<i>Build new functions from existing functions</i>	2

Figure 12. Percent of Common Core Mathematics Standards at each Depth of Knowledge Level



From *Lining Up: The Relationship between the Common Core State Standards and Five Sets of Comparison Standards* by David T. Conley Kathryn V. Drummond Alicia de Gonzalez Mary SeburnOdileStout Jennifer Rooseboom2011 Educational Policy Improvement Center

STRIVE HI, SLOs, and Supporting Teachers

- Grades K-2: DoK Level 2
- Grades 3-12: DoK Level 3 or 4
- What successes do you foresee for your students/teachers?
- What challenges or misconceptions do you anticipate?
What resources do you have to overcome those challenges? What resources might you need?
- What could you take away or modify from these activities?
- How do we lead teachers towards rigorous instruction?
What steps/strategies might be involved? What would be the first step?

Closure

- How would your understanding of DoK help teachers when writing and or evaluating SLOs?
- How would teachers' understanding of Webb's DoK help their students create goals?
- *How can school leaders recognize, encourage and support rigorous teaching and learning throughout the school?*

Questions & Answers

