Oklahoma State Department of Education
Office of C³ Schools
Office of School Support/School Improvement

Rigor and Relevance for Student Achievement February 20, 2013

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Say What?

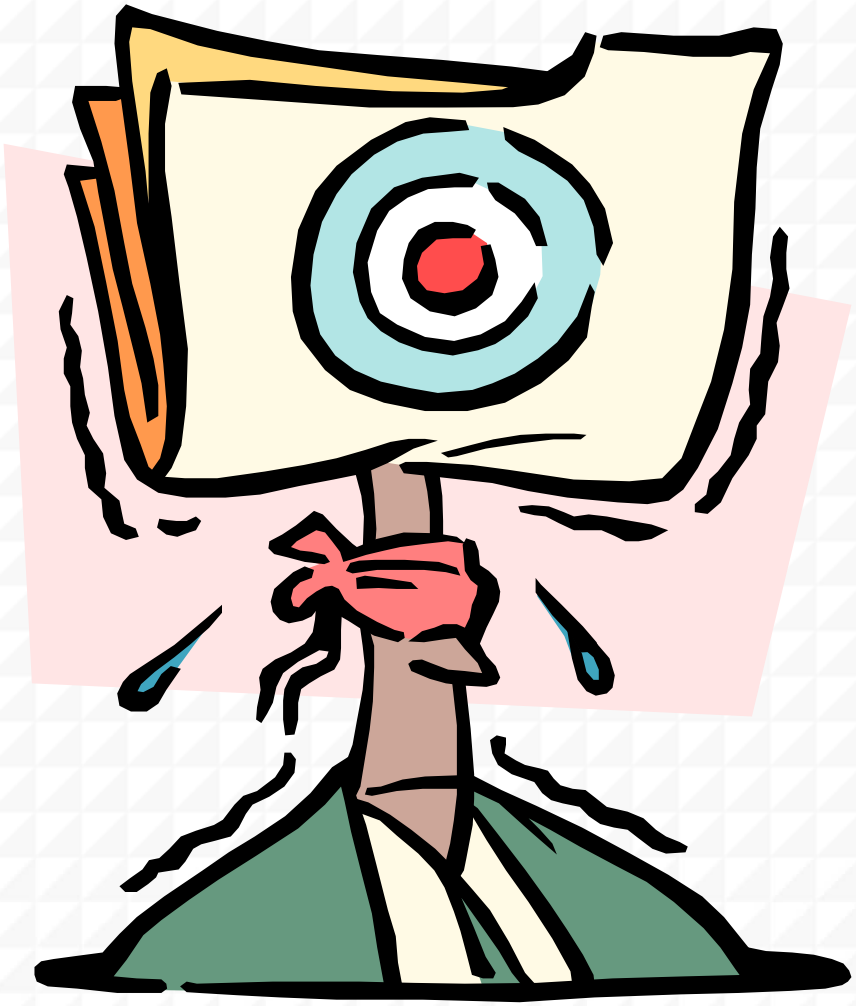
PURPOSE

Establish a Sense of Urgency for a Culture of High Expectations and System-wide Rigor and Relevance.

Working Agreements

- Choose to be present.
  - Bring your “best self” to the work. Model behavior to inspire others.
- Be an active listener.
  - Assume positive intent.
- Be part of the discussion.
  - We diminish the whole group when we silence ourselves.
- Understand that learning is a process—not an event.

Change



Did You Know?

What are the global issues we face today?

4-2-1

- Step 1-Write down what you believe to be the most serious global issue we face today.

Step 2-With a partner, come to consensus on one.

Step 3-With another pair, agree on the most important.

Who Are the Students We Teach?

- Digital Natives
- Live in Global World
- Parents & Students have new choices
  - On-line learning

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Learning Preferences of the Digital Generation

DIGITAL LEARNERS PREFER	MANY EDUCATORS PREFER
Receiving information quickly from multiple multimedia sources	Slow and controlled release of information from limited sources
Processing pictures, sounds, color and video before text	To provide text before pictures, sounds, color, and video
Random access to hyperlinked multimedia information	To provide information linearly, logically, and sequentially
To network simultaneously with many others	Students to work independently before they network and interact
Learning “just in time”	Teaching “just in case”
Instant gratification with immediate and deferred rewards	Deferred gratification and delayed rewards
Learning that is relevant, active, instantly useful, and fun	Teaching memorization in preparation for standardized tests

Analyzing and Connecting the CCSS

Organize the statements

- Each envelope contains 24 statements.
- Remove the contents of the envelopes and work together to organize the items in any way that makes sense to your groups.
- Once your items are arranged, designate a recorder to write a rationale for your organization on the blank index card.

Gallery walk

- Each group will visit 3 tables.
- You have 3 minutes to look at the organization of items and to discuss how the group's rational aligned (or did not align) with your group's rationale.

Process

- Revisit your original organization of the items and discuss any changes to your thinking.

Reading Standards

Analyze how and why individuals, events, and ideas develop and interact over the course of a text.	Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.	Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.	Read and comprehend complex literary and informational texts independently and proficiently.

Writing Standards

Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.	Draw evidence from literary or informational texts to support analysis, reflection, and research.

Speaking and Listening Standards

Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.	Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

Language Standards

Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.	Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

Mathematical Practices

Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.
Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

2014-2015

Next Generation Assessments

Gas Bills, Heating Degree Days, and Energy Efficiency

Here is a typical story about an Ohio family concerned with saving money and energy by better insulating their house.

Kevin and Shana Johnson's mother was surprised by some very high gas heating bills during the winter months of 2007. To improve the energy efficiency of her house, Ms. Johnson found a contractor who installed new insulation and sealed some of her windows. He charged her $600 for this work and told her he was pretty sure that her gas bills would go down by "at least 10 percent each year." Since she had spent nearly $1,500 to keep her house warm the previous winter, she expected her investment would conserve enough energy to save at least $150 each winter (10% of $1,500) on her gas bills.

Ms. Johnson's gas bill in January 2007 was $240. When she got the bill for January 2008, she was stunned that the new bill was $235. If the new insulation was going to save only $5 each month, it was going to take a very long time to earn back the $600 she had spent. So she called the insulation contractor to see if he had an explanation for what might have gone wrong. The contractor pointed out that the month of January had been very cold this year and that the rates had gone up from last year. He said her bill was probably at least 10% less than it would have been without the new insulation and window sealing.

Ms. Johnson compared her January bill from 2008 to her January bill from 2007. She found out that she had used 200 units of heat in January of 2007 and was charged $1.20 per unit (total = $240). In 2008, she had used 188 units of heat but was charged $1.25 per unit (total = $235) because gas prices were higher in 2008. She found out the average temperature in Ohio in January 2007 had been 32.9 degrees, and in January of 2008, the average temperature was more than 4 degrees colder, 28.7 degrees. Ms. Johnson realized she was doing well to have used less energy (188 units versus 200 units), especially in a month when it had been colder than the previous year.

Since she used gas for heating only, Ms. Johnson wanted a better estimate of the savings due to the additional insulation and window sealing. She asked Kevin and Shana to look into whether the "heating degree days" listed on the bill might provide some insight.

Argon Energy Co.

Customer	Bill Date
Ms. Arlene Johnson	January 31, 2008
42 Bluebonnet Avenue	Account #
Columbus, OH 43205	55-73342B
	Residential

Current Itemized Bill

December 30 reading actual	8300
January 31 reading actual	8488
Total units used January 2008	188
January 2008: 1108 heating degree days	
0 cooling degree days	
Price per unit @ $1.25	$235

Energy Use History

Total units used January 2007	200
January 2007: 1000 heating degree days	
0 cooling degree days	

TOTAL CURRENT CHARGES $235

(*continued*)

a. Assess the cost-effectiveness of Ms. Johnson's new insulation and window sealing. You will need to research on "heating degree days" on the internet. In your response, you must do the following:

- Compare Ms. Johnson's gas bills from January 2007 and January 2008.
- Explain Ms. Johnson's savings after the insulation and sealing.
- Identify circumstances under which Ms. Johnson's January 2008 gas bill would have been at least 10% less than her January 2007 bill.
- Decide if the insulation and sealing work on Ms. Johnson's house was cost-effective and provide evidence for this decision.

Enter response here

Submit

(*continued*)

b. Create a short pamphlet for gas company customers to guide them in making decisions about increasing the energy efficiency of their homes. The pamphlet must do the following:

- List the quantities that customers need to consider in assessing the cost-effectiveness of energy efficiency measures.
- Generalize the method of comparison used for Ms. Johnson's gas bills with a set of formulas, and provide an explanation of the formulas.
- Explain to gas customers how to weigh the cost of energy efficiency measures with savings on their gas bills.

When you have completed your pamphlet, upload it using the button below.

Select a file... Submit

Performance Event drawn from the Ohio Performance Assessment Project.

Common Core State Standards

- Fewer
- Higher
- Deeper
- The students will be expected to THINK and apply their knowledge
- Computerized
- Next Generation of Testing, 2014-15

Why Change?

- Career and College Ready
- 21st Century Skills
- Technology
- Foundational Knowledge
- Pursuit of Excellence
- Maximize Potential

Checking in:

- View **Singapore School**
- Write down 4 - 6 key words that stand out to you, and the reasons you chose them
- Each person at your table share your list with your table team


0:00 / 7:45

After Viewing:

- Share your list of 4-6 key words with your table and the reasons you chose them.

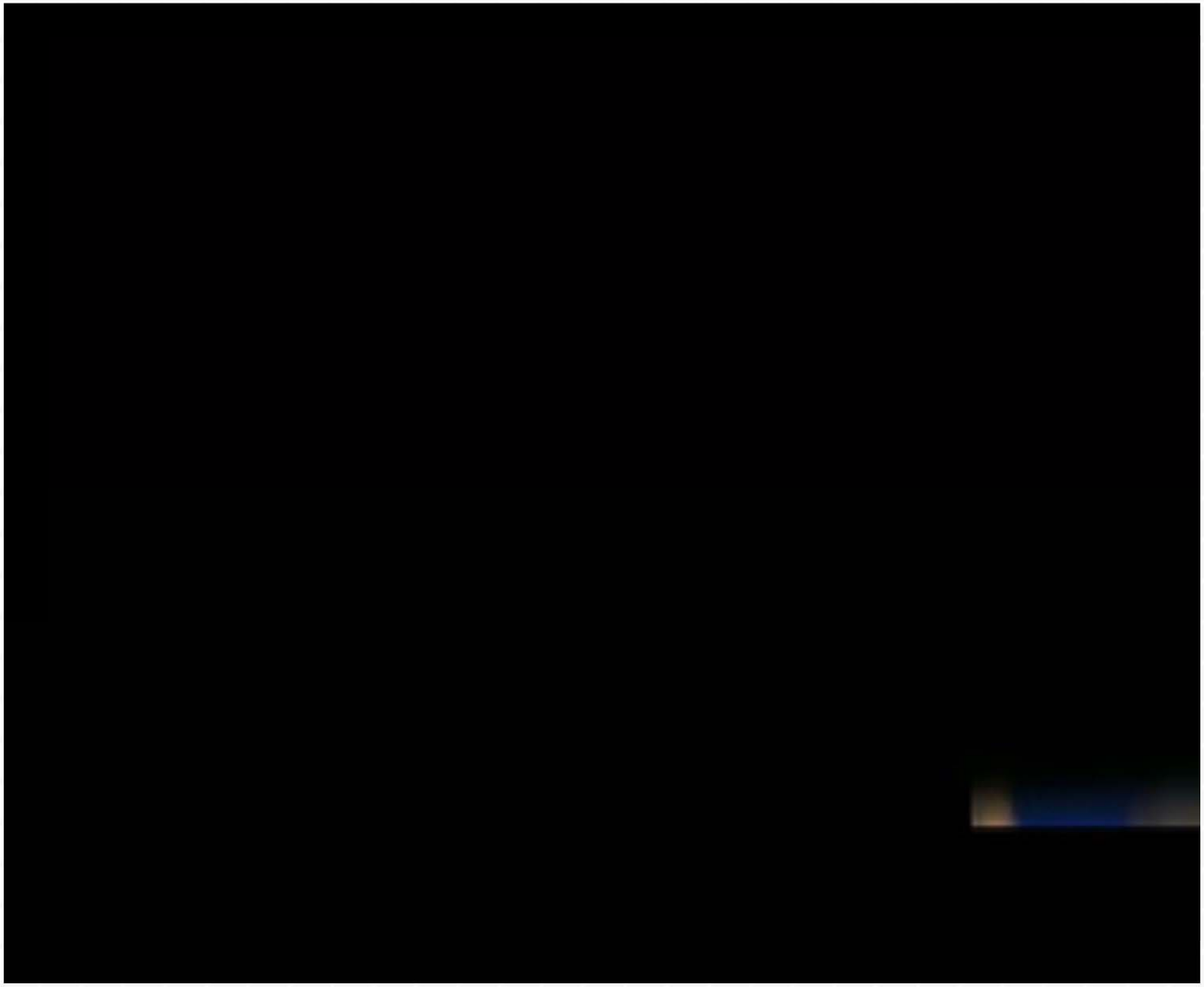
“We’re teaching kids to live on a planet we’ve never seen.”

-Mary Catherine Bateson

Rigor and Relevance

Why Relevance?

- What do you think of when you hear the phrase, “hole in the wall”?



Debrief

- After viewing the clip, has your view of the phrase “hole in the wall” changed? How? Why?

- How does this clip connect the importance of relevance?

Relevance can hook us, can keep us working through struggles, comfort us, and spark original ideas.

To add Relevance to a Lesson or Unit...

consider...

- Student's life
- Family's life
- Student's community and friends
- Our world, nation, state
- World of Work
- World of Service
- World of Business and Commerce that we interact with
- Our natural world

Use the Real World

- Moral, ethical, political, cultural points of view, and dilemmas
- Real world materials
- Internet resources
- Video and other media
- Scenarios, real life stories
- News - periodicals, media

Rigor

Rigor...

Increases preparedness for the future, creativity and constructive struggle.

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Why Rigor?

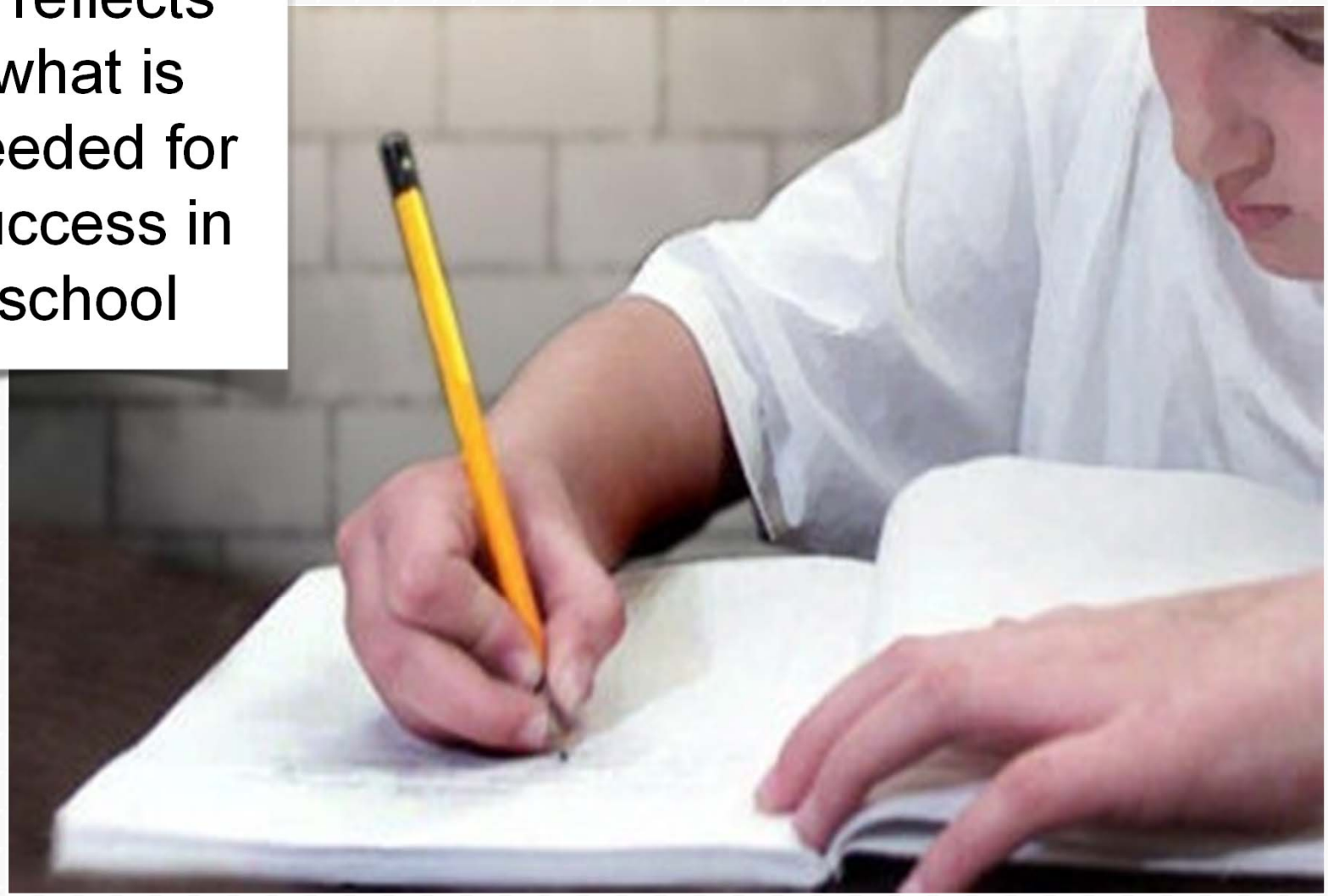
It reflects what is needed in the 21st Century

Why Rigor?

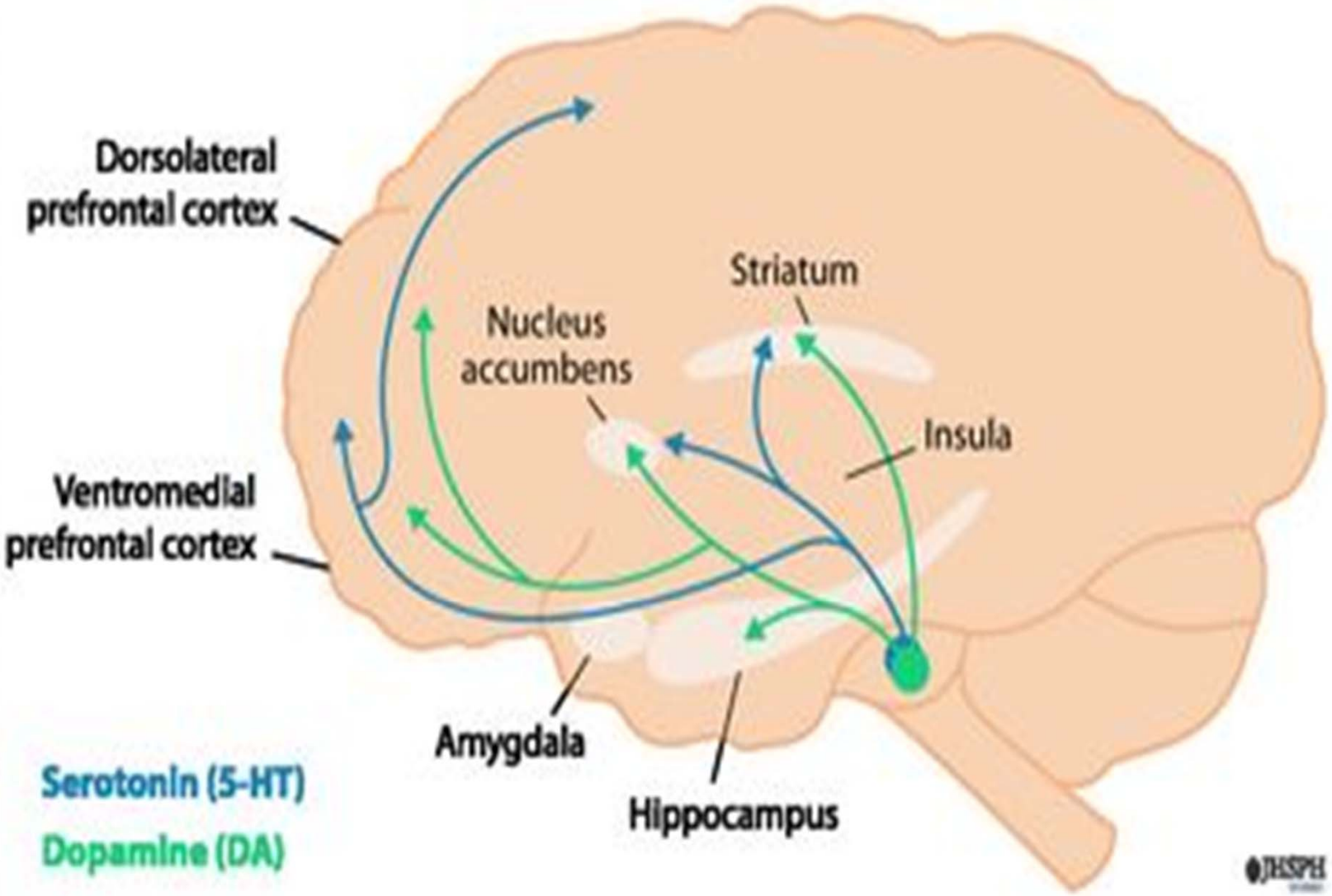
It engages us & reflects how our brains naturally work

Why Rigor?

It reflects what is needed for success in school



serotonin & dopamine pathways



Rigor is…

- Scaffolding thinking
- Planning for thinking
- Assessing thinking about content
- Recognizing the level of thinking students demonstrate
- Managing the teaching/ learning level for the desired thinking level

Rigor is NOT…

- More or harder worksheets
- AP or honors courses
- The higher level book in reading
- More work
- More homework

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RIGOR

MEANS FRAMING LESSONS AT THE HIGH END OF THE KNOWLEDGE TAXONOMY

EVALUATION

SYNTHESIS

ANALYSIS

APPLICATION

COMPREHENSION

KNOWLEDGE

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Rigorous Lessons ask Students to:

EXAMINE

PRODUCE

CLASSIFY

DEDUCE

GENERATE

ASSESS

CREATE

PRIORITIZE

SCRUTINIZE

DECIDE

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Ways to increase Rigor

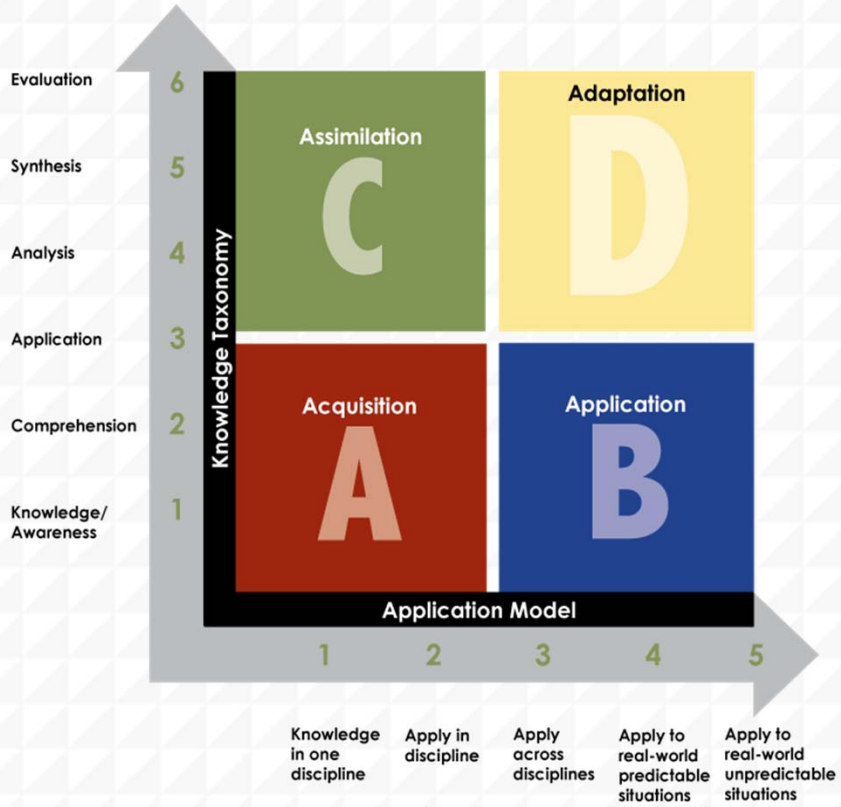
1. QUESTIONS!!!
2. Making thinking visible
3. Sharing clear examples
4. Writing and thinking as a measure of thinking
5. Create challenging problems for them to solve

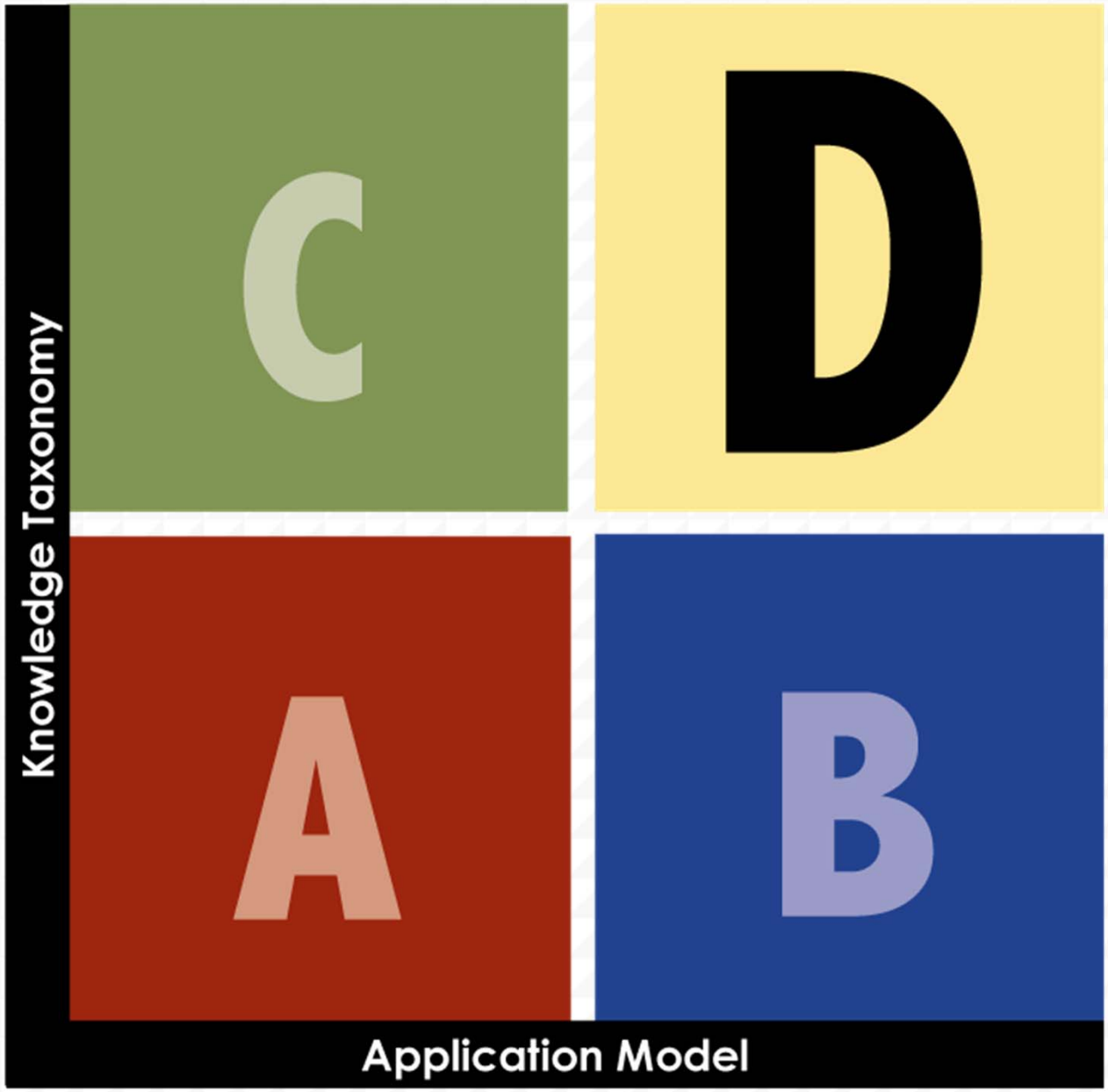
IN MY CLASS

- Provide and example of a rigorous activity you facilitate.

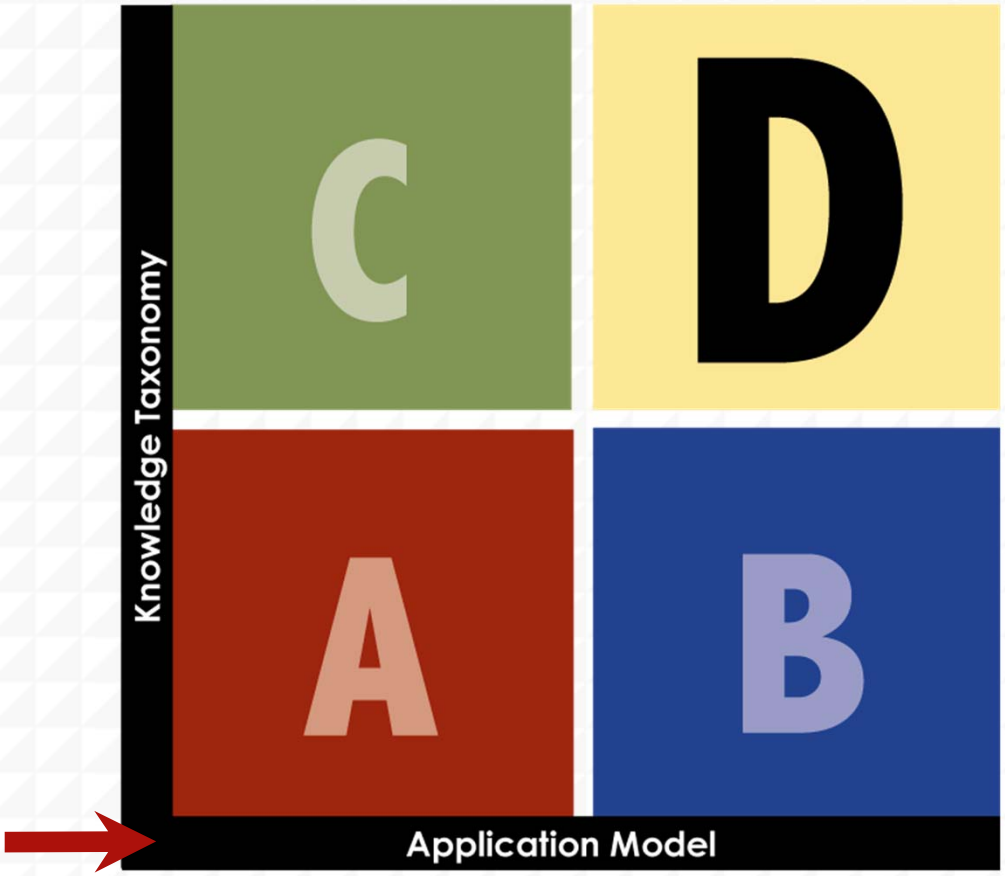
- Share with a partner.

Rigor and Relevance Framework




C
D
A
B
Knowledge Taxonomy
Application Model

Application Model



1. Knowledge in one discipline
2. Application within discipline
3. Application across disciplines
4. Application to real-world predictable situations
5. Application to real-world unpredictable situations

Application Model

5 Application to real-world unpredictable situations

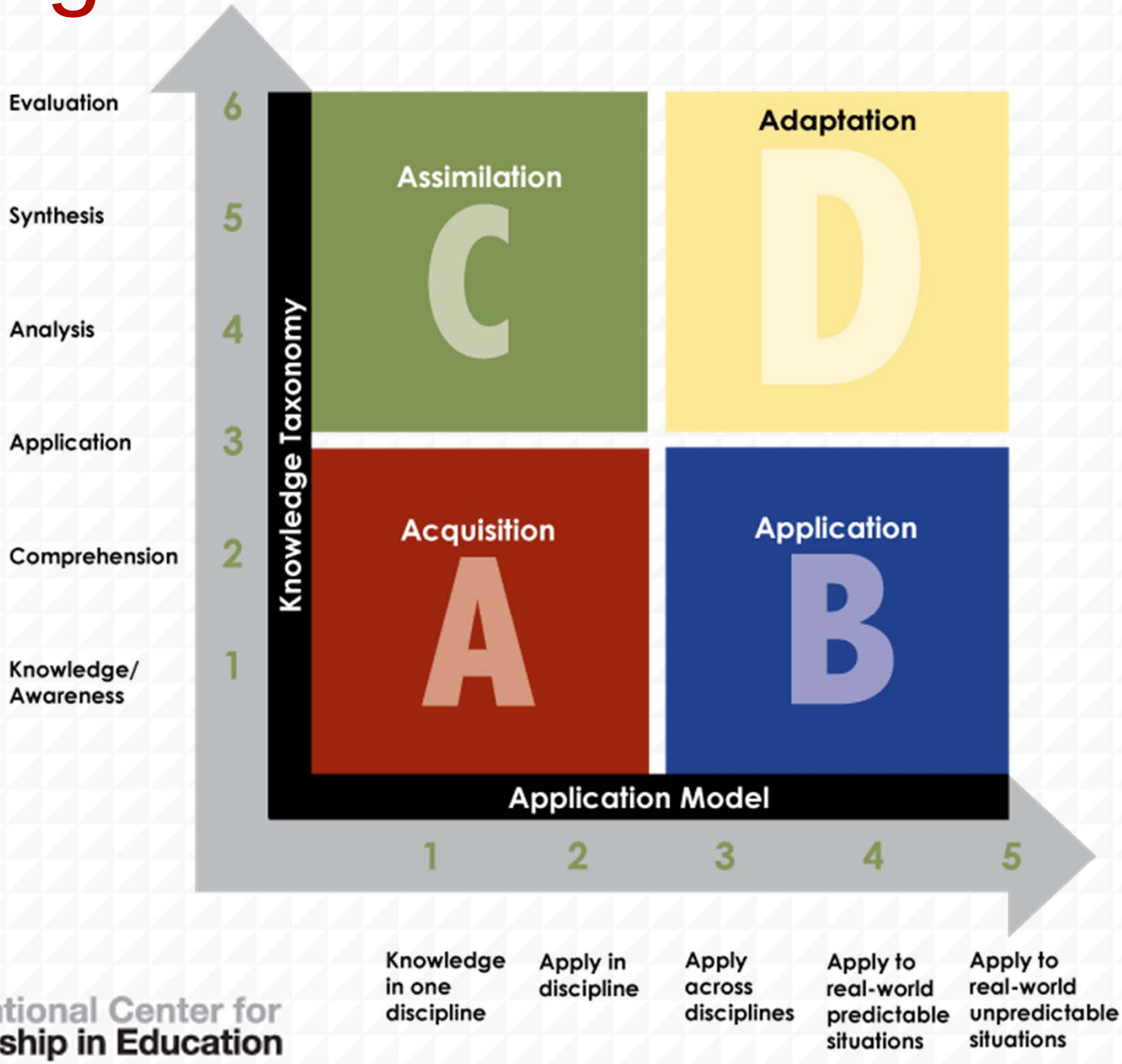
4 Application to real-world predictable situations

3 Application across disciplines

2 Application within discipline

1 Knowledge of one discipline course

Rigor/Relevance Framework



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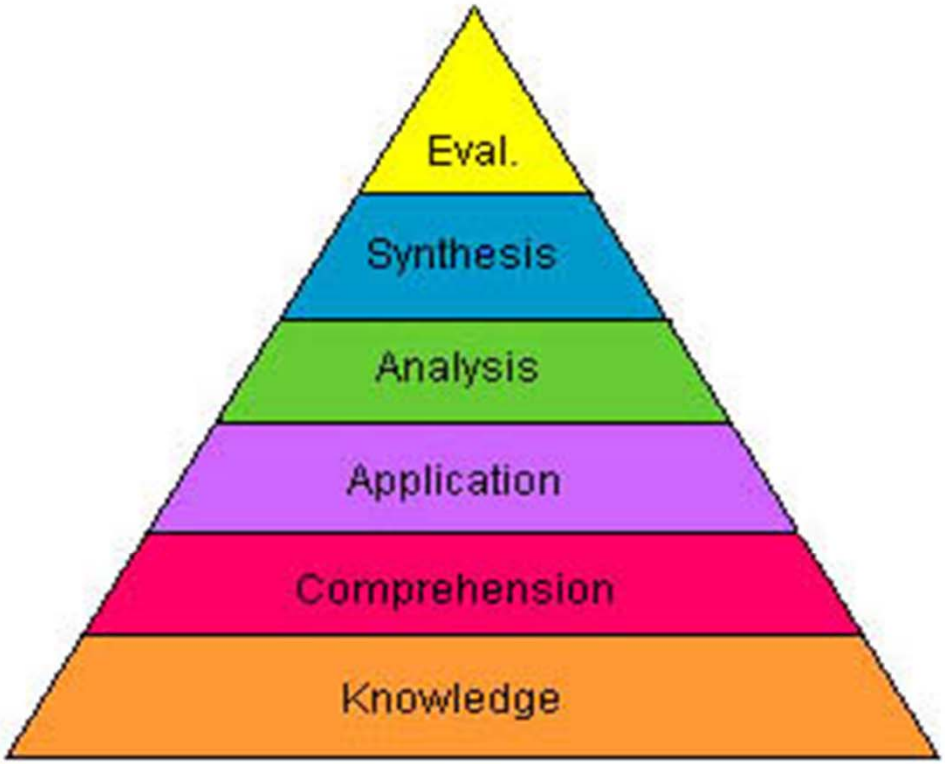
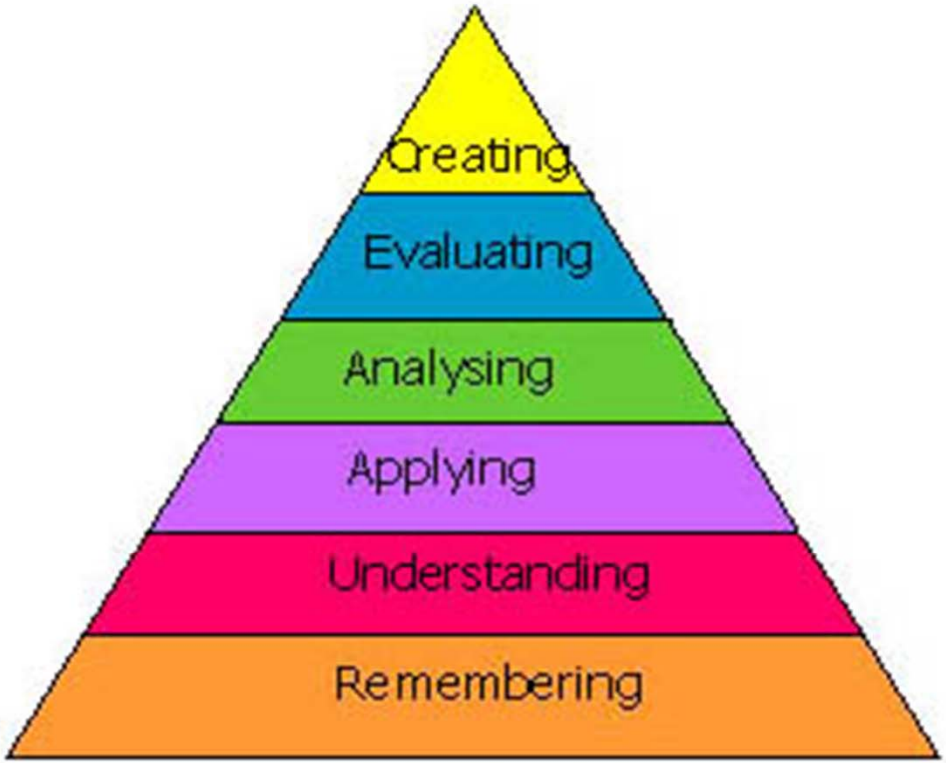
Knowledge Taxonomy

6. Evaluation
5. Synthesis
4. Analysis
3. Application
2. Comprehension
1. Recall Knowledge

Old Bloom Taxonomy
VS.
New Blooms Taxonomy



Old Version

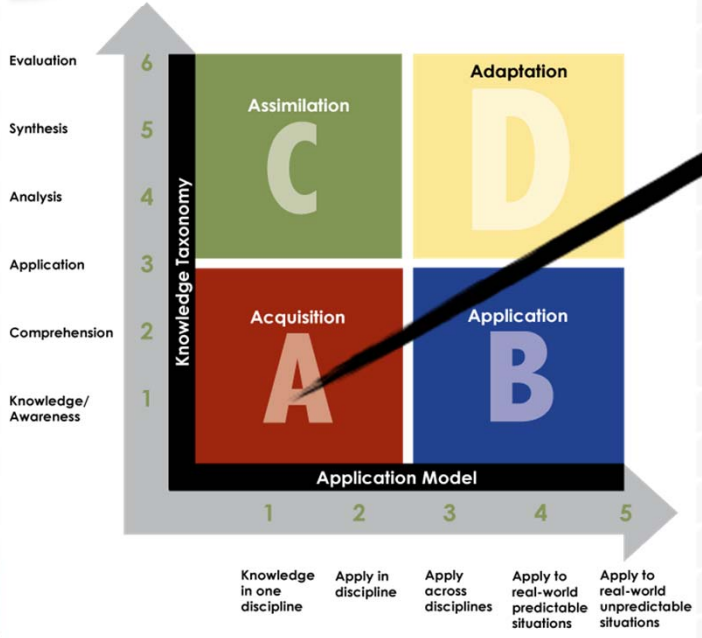


New Version

quad A question

How would you define that? What did you observe?

lower levels of thinking



Gathering and storing bits of information in order to understand and remember

Acquisition

A

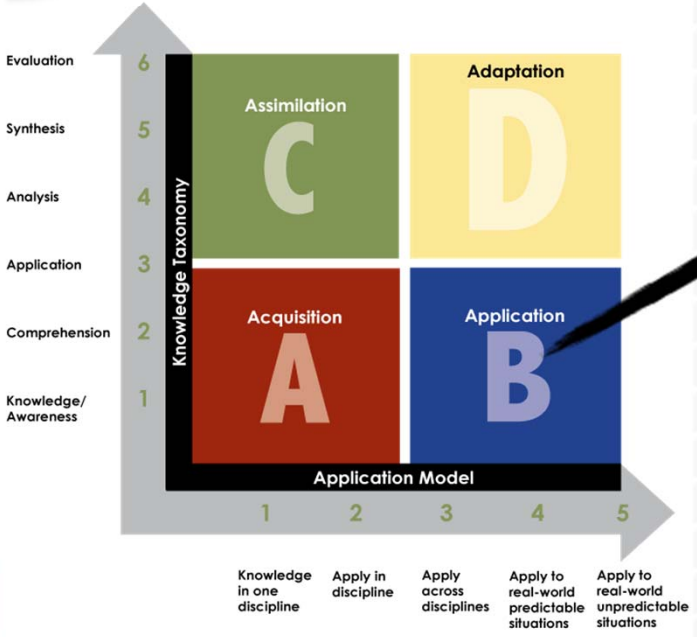
Example: Recall definitions of various science terms.

lower levels of application

Quad B question

Where or how can you use this knowledge?

lower levels of thinking



Using knowledge to solve problems and complete work.

Application

B

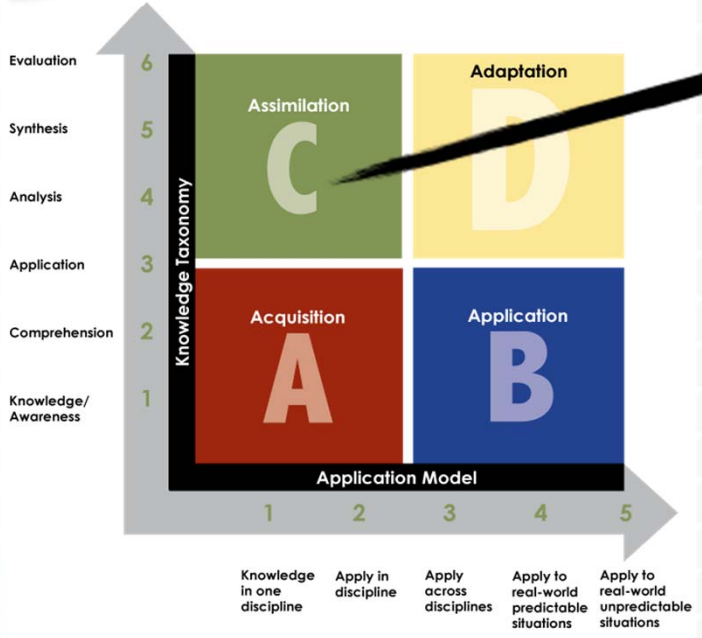
Example: Follow written directions to conduct an experiment

higher levels of application

Quad C question

How are those ideas similar and different?

high levels of thinking



Using high levels of knowledge to analyze problems and create solutions

Assimilation

C

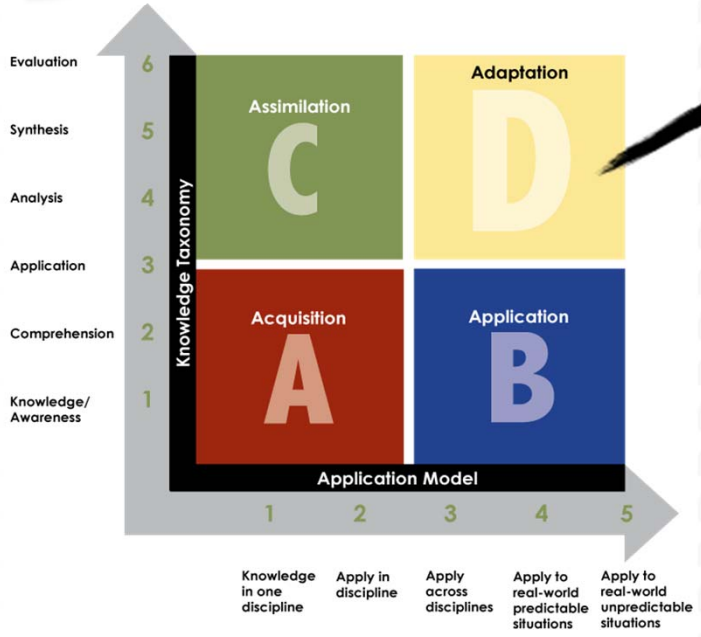
Example: Analyze data to prove or disprove a theory

lower levels of application

Quad D question

How might you design a _____ to _____?

high levels of thinking



Thinking in complex ways and applying thinking to find solutions to unpredictable problems

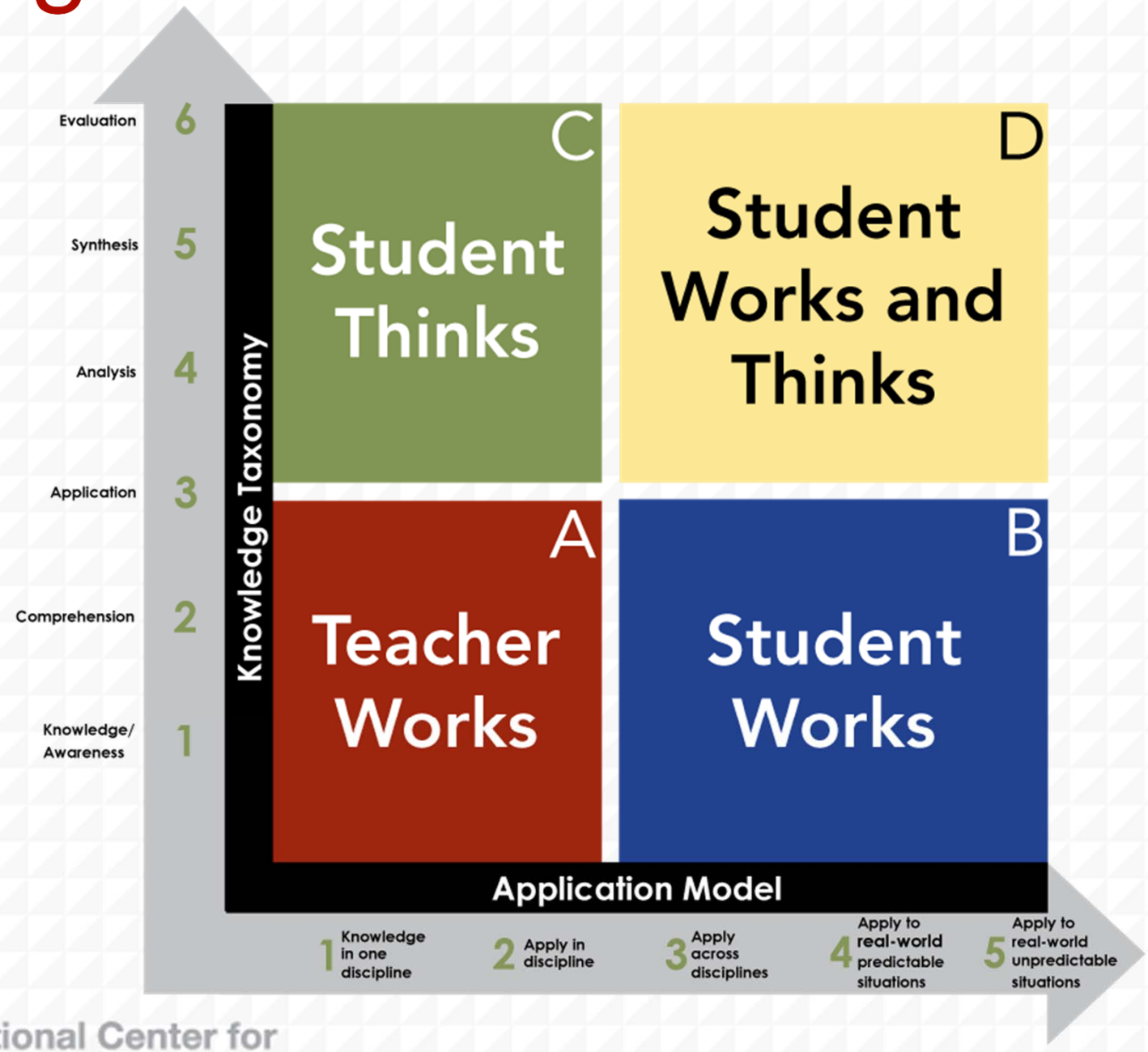
Adaptation

D

Example: Design your own experiment to collect data to solve a real-world problem

high levels of application

Rigor/Relevance Framework



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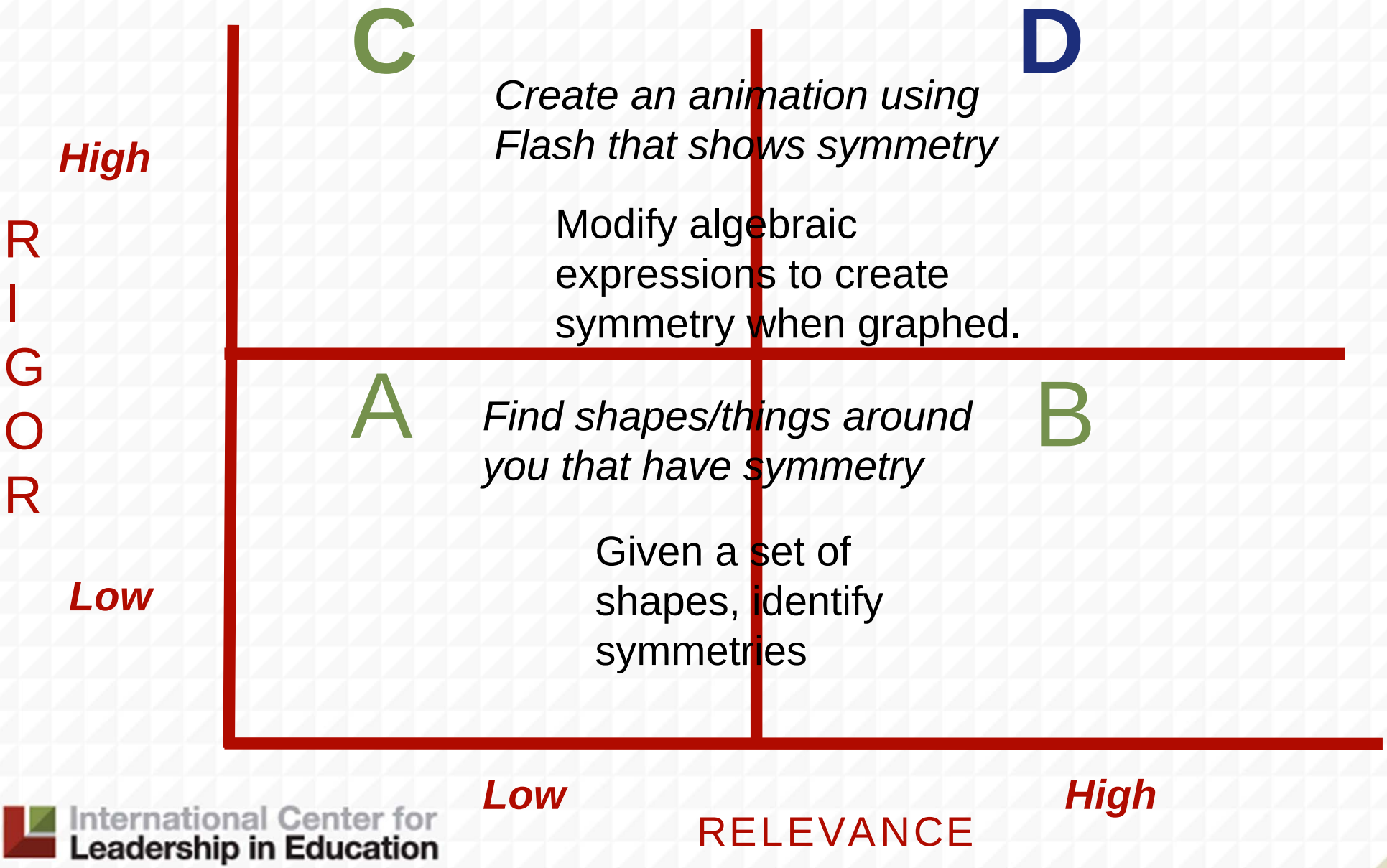
Rigor/Relevance Framework

Math Middle Level - Geometry: Identify rotational symmetry and distinguish between types of symmetry



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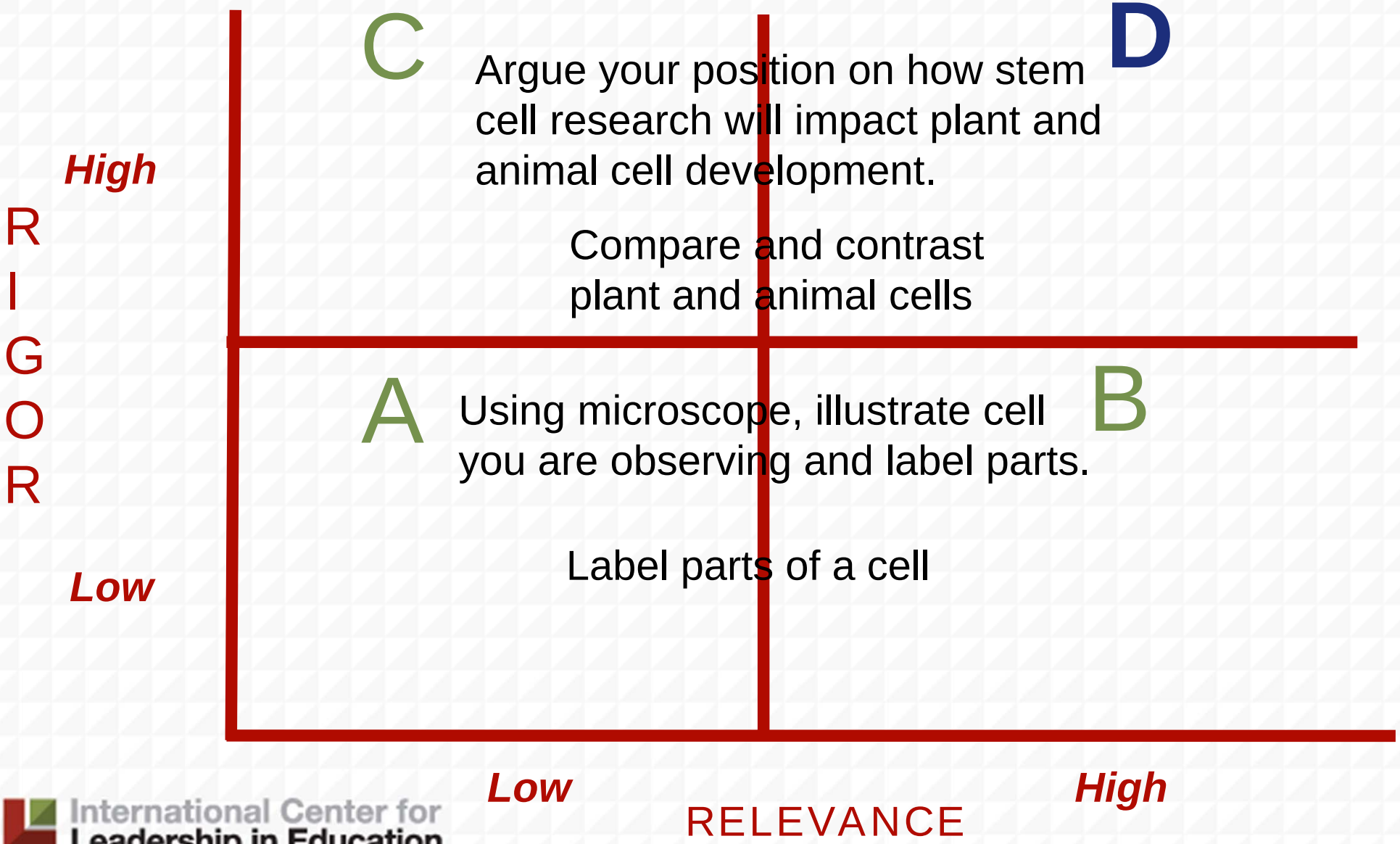
Rigor/Relevance Framework

Math Middle Level - Geometry: Identify rotational symmetry and distinguish between types of symmetry

RIGOR	Low RELEVANCE	High RELEVANCE
High	**C** Modify algebraic expressions to create symmetry when graphed.	**D** Create an animation using Flash that shows symmetry
Low	**A** Given a set of shapes, identify symmetries	**B** Find shapes/things around you that have symmetry

Rigor/Relevance Framework

Science – Cell Biology



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Rigor/Relevance Framework

Science – Cell Biology

RIGOR	Low RELEVANCE	High RELEVANCE
High	**C** Compare and contrast plant and animal cells	**D** Argue your position on how stem cell research will impact plant and animal cell development.
Low	**A** Label parts of a cell	**B** Using microscope, illustrate cell you are observing and label parts.

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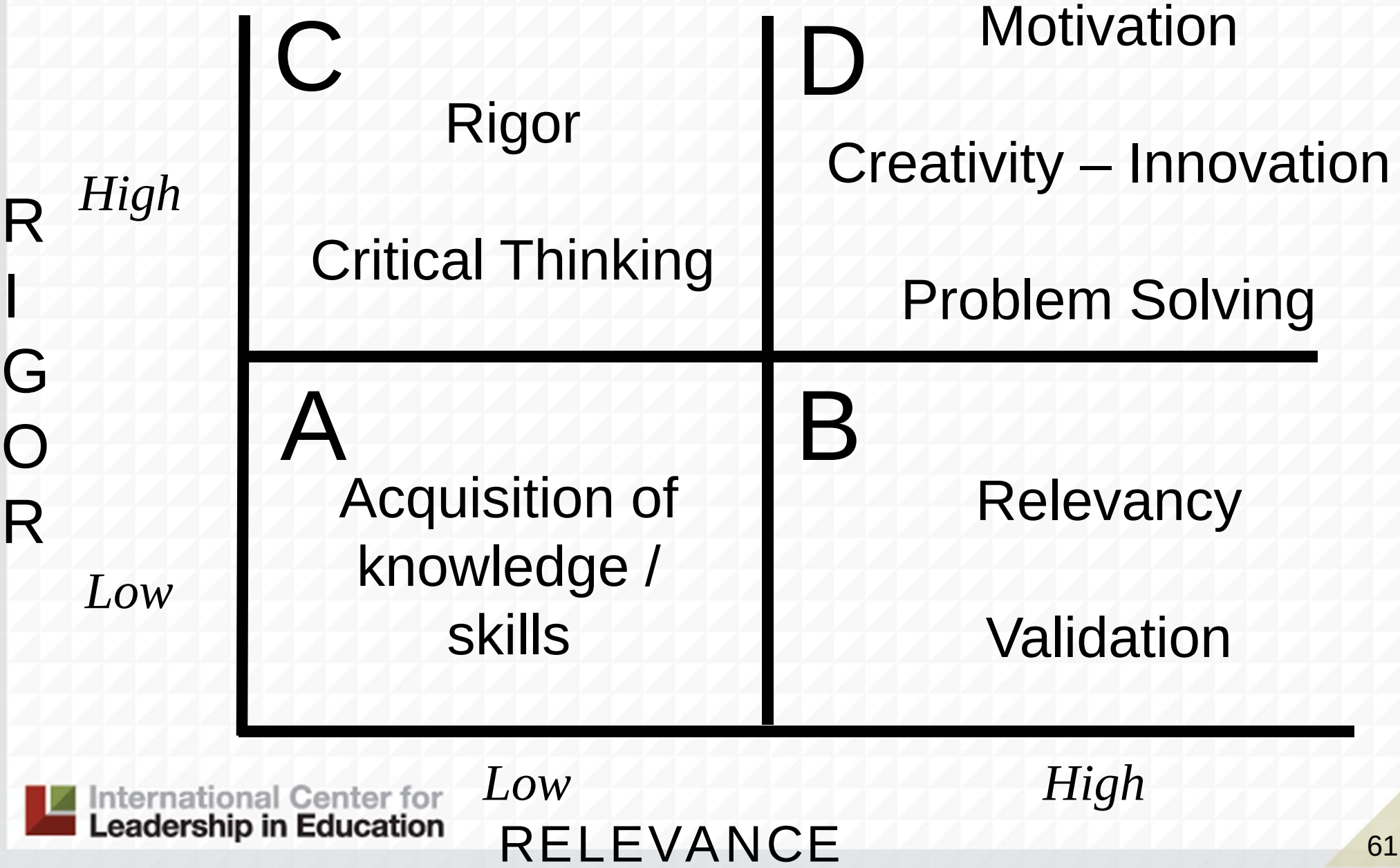
Rigor/Relevance Framework



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Rigor / Relevance Framework™

Knowledge Taxonomy

Evaluation 6 "Judge the Outcome" **Synthesis 5** "Putting Together" **Analysis 4** "Taking Apart"	**C** **Assimilation** *Students extend and refine their knowledge so that they can use it automatically and routinely to analyze and solve problems and create solutions.* **Student Thinks** **(Relationships Important)**	**D** **Adaptation** *Students have the competence that, when confronted with perplexing unknowns, they are able to use their extensive knowledge base and skills to create unique solutions and take action that further develops their skills and knowledge.* **Student Thinks and Works** **(Relationships Critical)**
Application 3 "Making use of Knowledge" **Comprehension 2** "Confirming" **Knowledge 1** "Information Gathering"	**A** **Acquisition** *Students gather and store bits of knowledge and information and are expected to remember or understand this acquired knowledge.* **Teacher Works** **(Relationship of little Importance)**	**B** **Application** *Students use acquired knowledge to solve problems, design solutions, and complete work. The highest level of application is to apply appropriate knowledge to new and unpredictable situations.* **Student Works** **(Relationships Important)**

Relevance Makes Rigor Happen!	**1**	**2**	**3**	**4**	**5**
	Knowledge in one Discipline	Apply Knowledge in one discipline	Apply Knowledge across disciplines	Apply knowledge to real world predictable situations	Apply knowledge to real world unpredictable situations

Application Model

Rigor/Relevance Framework Quiz

Which Quadrant is labeled as High Rigor and High Relevance?

A

B

C

D

Rigor/Relevance Framework Quiz

Which Quadrant is most frequently tested?

A

B

C

D

Rigor/Relevance Framework Quiz

Which Quadrant leads to greater student engagement and learning retention?

A

B

C

D

Rigor/Relevance Framework Quiz

Which defines Rigor?

A. More and longer assignments

B. High level thinking and reflection

C. Rigid deadlines

D. Increased difficulty

Rigor/Relevance Framework Quiz

Which defines Relevance?

A. Learning is fun

B. Student choice

C. No grades

D. Application to the real world

Rigor/Relevance Framework Quiz

Which Quadrant is most important?

A

B

C

D

Increasing the Level of Rigor and Relevance

Verbs by Quadrant

Knowledge Taxonomy

Evaluation	6	analyze, categorize, classify, compare, conclude, contrast, debate, defend, diagram, differentiate, discriminate	evaluate, examine, explain, express, generate, infer, judge, justify, prove, research, study, summarize	adapt, compose, conclude, create, design, develop, discover, explore, formulate, invent, modify, plan	predict, prioritize, propose, rate, recommend, revise, teach
Synthesis	5				
Analysis	4				
Application	3	calculate, choose, count, define, describe, find, identify, label, list, locate, match	memorize, name, point to, recall, recite, record, say, select, spell, view	adjust, apply, build, collect, construct, demonstrate, display, dramatize, draw, fix, follow	illustrate, interpret, interview, look up, maintain, make, measure, model, operate, practice, solve
Comprehension	2				
Knowledge/ Awareness	1				

Application Model

1	2	3	4	5
Knowledge in one discipline	Apply in discipline	Apply across disciplines	Apply to real-world predictable situations	Apply to real-world unpredictable situations

p. 5 Using R/R Handbook

Verbs by Quadrant

A	B	C	D
name	apply	analyze	evaluate
label	sequence	compare	formulate
define	demonstrate	examine	justify
select	interview	contrast	rate
identify	construct	differentiate	recommend
list	solve	explain	infer
recite	calculate	dissect	prioritize
locate	dramatize	categorize	Revise
record	interpret	classify	predict
memorize	illustrate	diagram	argue
		discriminate	conclude

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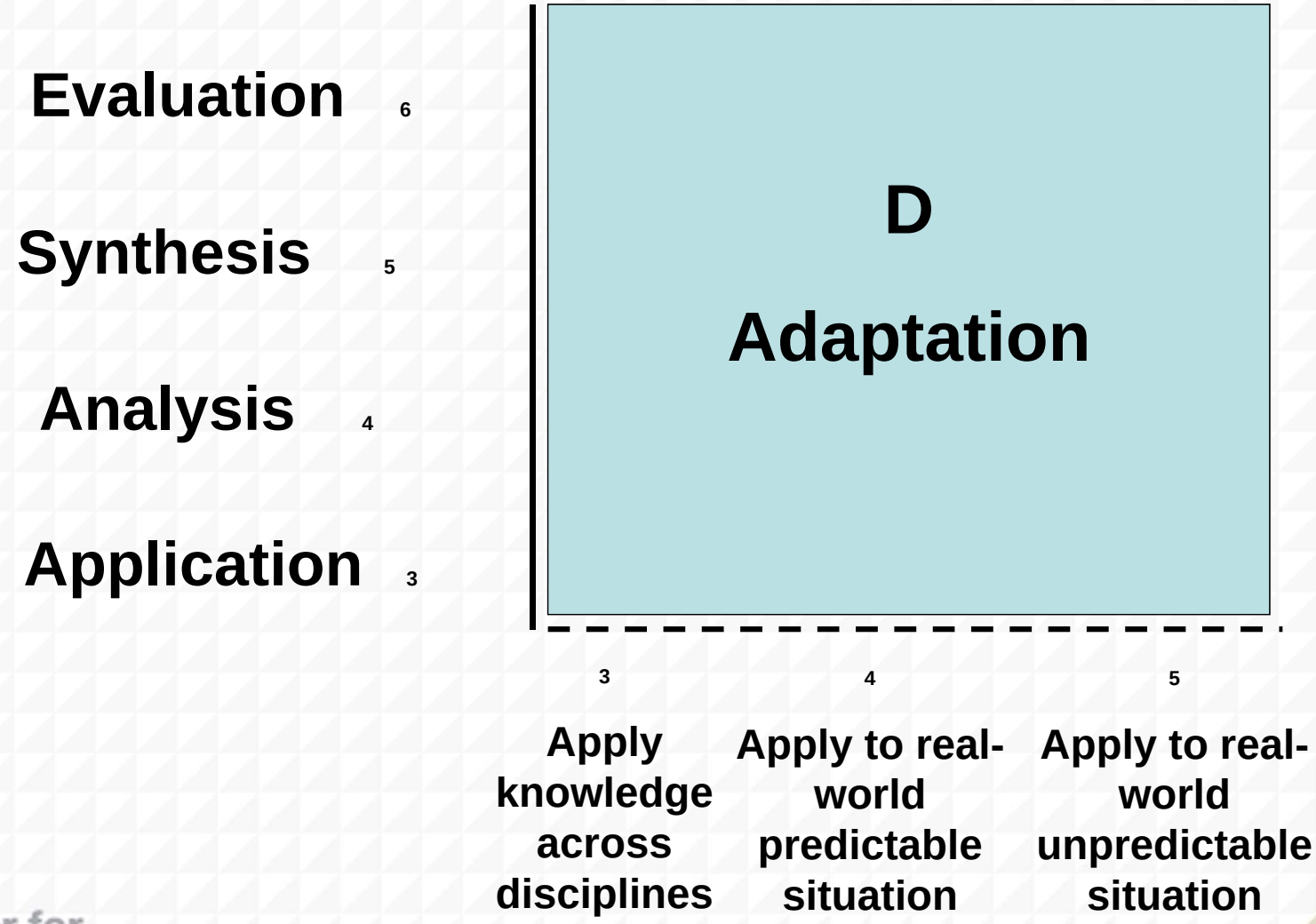
Product by Quadrant

A	B	C	D
definition	scrapbook	essay	evaluation
worksheet	summary	abstract	newspaper
list	interpretation	blueprint	estimation
quiz	collection	inventory	trial
test	annotation	report	editorial
workbook	explanation	plan	play
true-false	solution	chart	collage
reproduction	demonstration	investigation	machine
recitation	outline	questionnaire	adaptation
		classification	poem
			debate
			new game
			invention

Students think in complex ways and apply acquired knowledge and skills, even when confronted with perplexing unknowns, to find creative solutions and take action that further develops their skills and knowledge.



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D Quadrant

Verbs

evaluate
validate
justify
rate
referee
infer
rank
dramatize
argue
conclude

Products

evaluation
newspaper
estimation
trial
editorial
radio program
play
collage
machine
adaptation
poem
debate
new game
invention

How to Start a Movement

System-Wide???