

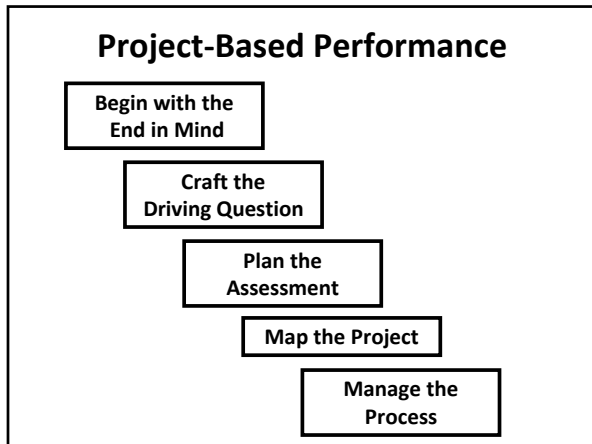
# **Preparing Students for the 21<sup>st</sup> Century**

## **Product Performance Assessments**

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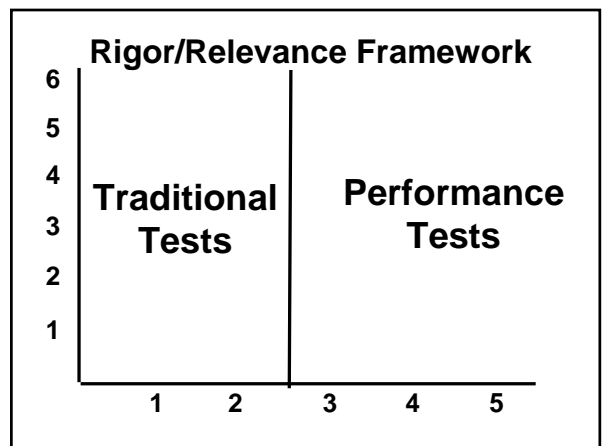
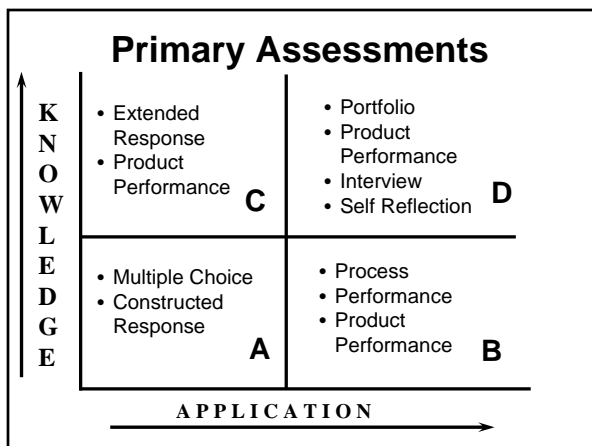
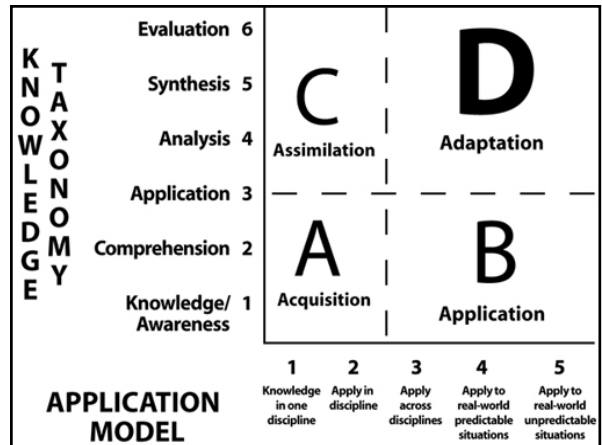
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- ### Map the Product Performance
- Work backward from a topic
  - Use your standards
  - Find projects and ideas on the Web
  - Match what people do in their daily work
  - Tie projects to local and national events
  - Identify community support systems

- ### Product performance focuses on what students need to
- Know
  - Be Able to Do
  - Be Like (Behaviors)
- for success in life and in career

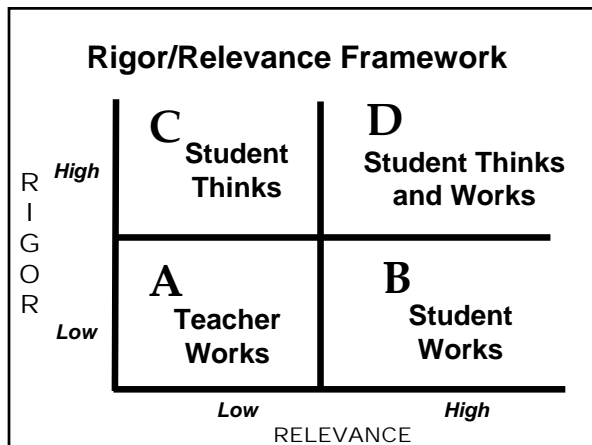


### Verb list by Rigor/Relevance Quadrant

6 5 4 3 2 1	analyze	differentiate	adapt	justify	1 2 3 4 5
	categorize	discriminate	argue	modify	
	classify	evaluate	compose	predict	
	compare	explain	conclude	prioritize	
	conclude	infer	construct	propose	
	contrast	judge	design	rate	
defend	justify	evaluate	recommend		
diagram	prove	formulate	revise		
		invent	teach		
	calculate	match	adjust	interpret	
	choose	memorize	apply	interview	
	count	name	build	make	
	describe	recite	calculate	model	
	find	record	construct	play	
	identify	select	dramatize	relate	
	label	spell	draw	solve	
	list	locate	illustrate		

### Product by Quadrant

<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
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



- ### Driving Questions
- are provocative
  - are open ended
  - go to the heart of a discipline or topic
  - are challenging
  - can arise from real world dilemmas that students find interesting
  - are consistent with curricular standards and frameworks

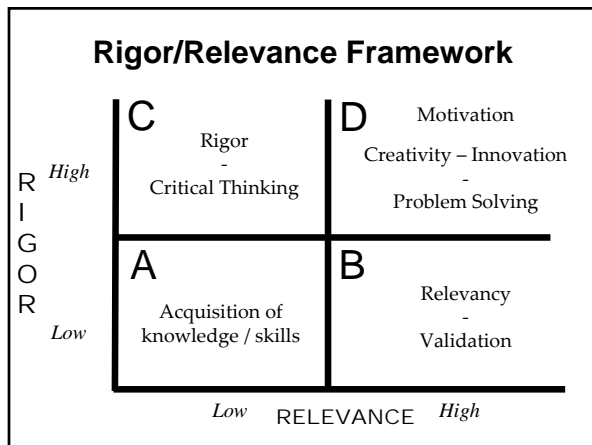
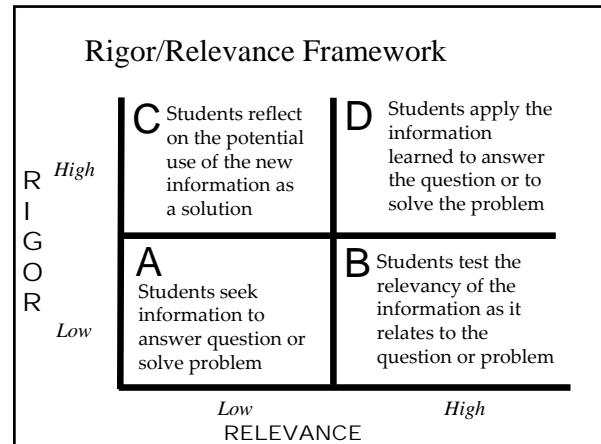
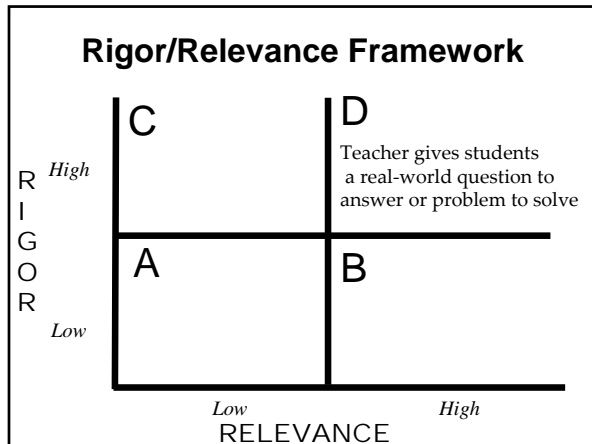
- ### The Driving Question is Paramount
- Single Driving Question.
  - Students break the Driving Question into many smaller questions lead to a deep understanding
  - Each student can relate to the Driving Question
  - The Driving Question elicits multiple views that intrigue and engage a diverse group of students.
  - Teacher don't answer the Driving Question
  - Teacher refers to the Driving Question each day

### Performance-based Project

A science class is designing a year-long ecology project on recycling. Students will calculate waste by weighing trash, counting discarded recyclable bottles, and estimating the amount of paper placed into wastebaskets in school classrooms.

Students will then create posters and an information booth to be set up in the school cafeteria, where materials and background information on recycling will be distributed to students.

At the end of the year, students will redo all calculations to determine if the amount of trash has decreased and recycling has increased.



- ### Planning Effective Assessments
- Align the products or performances for the project with the outcomes
  - Know what to assess - establish criteria to assess each product and performance
  - Create rubrics for the project
  - Each step includes several sub-steps, and should result in a balanced assessment plan.

- ### Balanced Assessment Plan
- Variety of measures closely tied to standards that assess knowledge, skills, and behaviors learned.
  - Multiple performance indicators give all students, each with different strengths, the opportunity to succeed.
  - Includes formative assessments (assessments that allow for feedback as the project progresses) and
  - Summative assessments (provide students with a culminating appraisal of their performance.)

### Performance Assessments

Planning for the assessments in a project is a step that comes *before* the project begins. Students should know exactly what will be required of them, and what criteria will be used to evaluate their performance.

Projects require *multiple* measures to answer at least three questions at the end of a project.

## Performance Assessments Measure

1. How well students know the content of the topic of the project?
2. How well students have mastered the key skills learned in the project?
3. How well did students apply their knowledge and skills as they prepared their products?

# Skill

**Read a math word problem, identify the applications required, and solve the problem.**

## Rigor/Relevance Framework

6	Analyze the graphs of the perimeters and areas of squares having different-length sides. Determine the largest rectangular area for a fixed perimeter.	<ul style="list-style-type: none"> <li>Obtain historical data about local weather to predict the chance of snow, rain, or sun during year.</li> <li>Test consumer products and illustrate the data graphically.</li> <li>Plan a large school event and calculate resources (decorations, etc.) you need to organize and hold this event.</li> <li>Make a scale drawing of the classroom on grid paper, each group using a different scale.</li> </ul>			
5	Identify coordinates for ordered pairs that show an algebraic relation or function.				
4	Determine and justify the similarity or congruence for two geometric shapes.				
3					
2	<ul style="list-style-type: none"> <li>Express probabilities as fractions, percents, or decimals.</li> <li>Classify triangles according to angle size and/or length of sides.</li> <li>Calculate volume of simple three-dimensional shapes.</li> <li>Given the coordinates of a quadrilateral, plot the quadrilateral on a grid.</li> </ul>	<ul style="list-style-type: none"> <li>Calculate percentages of advertising in a newspaper.</li> <li>Tour the school building and identify examples of parallel and perpendicular lines, plan angles.</li> <li>Determine the median and mode of real data displayed in a histogram.</li> <li>Organize and display collected data, using appropriate tables, charts, or graphs.</li> </ul>			
1					
	1	2	3	4	5

## A 21<sup>st</sup> Century Classroom is

Teacher-directed  
Direct Instruction  
Knowledge  
Content  
Basic Skills  
Theory  
Curriculum  
Individual  
Classroom  
Summative Assessed  
Learning for School

Student-directed  
Collaborative Construction  
Skills  
Process  
Higher-order Thinking  
Practice  
Life Skills  
Group  
Community  
Formative Evaluation  
Learning for Life

A Better



Balance

## 21<sup>st</sup> Century Skills

### Learning & Innovation Skills

- Creativity & Innovation
- Critical Thinking & Problem-solving
- Communication & Collaboration

### Information, Media & Technology Skills

- Information Literacy
- Media Literacy
- ICT Literacy

### Life & Career Skills

- Flexibility & Adaptability
- Initiative & Self-direction
- Social & Cross-cultural Skills
- Productivity & Accountability
- Leadership & Responsibility



I have come to a frightening conclusion. I am the decisive element in the classroom. It is my personal approach that creates the climate. It is my daily mood that makes the weather. As a teacher, I possess tremendous power to make a child's life miserable or joyous. I can be a tool of torture or an instrument of inspiration. I can humiliate or humor, hurt or heal. In all situations, it is my response that decides whether a crisis will be escalated or de-escalated, and a child humanized or de-humanized."

Haim Ginott

# Begin with the End in Mind

Summarize the theme for this project. Why do this project?
Identify the content standard that students will learn in this project (two to three per subject).
Identify key skills students will learn in this project. List only those skills you plan to assess (two to four per person).
Identify the habits of mind that students will practice in this project (one to two per project).

- *Does the project meet the criteria for standards-focused PBL?*

# Craft the Driving Question

State the essential question or problem statement for the project. The statement should encompass all project content and outcomes, and provide a central focus for student inquiry.
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- *Have you posed an authentic problem or significant question that engages students and requires core subject knowledge to solve or answer?*

# Plan the Assessment

<b>Step 1: Define the products for the project. What will you assess?</b>
Early in the Project:
During the Project:
End of the Project:

<b>Step 2: State the criteria for exemplary performance for each product:</b>
Product:
Criteria:
Product:
Criteria:
Product:
Criteria:
Product:
Criteria:

- *Do the products and criteria align with the standards and outcomes for the project?*

## Critical Thinking

<b>Criteria</b>	<b>Unsatisfactory Below performance standards</b>	<b>Proficient Acceptable criteria</b>	<b>Advanced Demonstrates exceptional performance</b>
<p><b>Appropriateness</b></p> <p>The student selects material, objects, and/or techniques that meet the needs, requirements, and rules of the time, place, and audience.</p>	<p>Material (photo, sound files, video clips, apparel, illustrations, etc.) is not appropriate for the audience and the situation.</p> <p>Language is not appropriate for the audience and the situation (as defined by school and district guideline).</p> <p>No evidence that students has selected an effective tool, technique, or paradigm to achieve the goal as defined in the project or course guideline.</p> <p>Humor doesn't enhance understanding and may offend audience.</p>	<p>Student selects material (photos, sound files, video clips, apparel, illustrations, etc.) that is appropriate for the audience and the situation.</p> <p>Student uses language appropriate for the audience and the situation.</p> <p>Student selects an effective tool, technique, or paradigm to achieve the desired goal as defined in the project or course guideline.</p> <p>Student uses humor that enhances understanding and doesn't offend audience.</p>	<p><i>In addition to Proficient criteria:</i></p> <p>Student shows a deep understanding of the audience and the situation by selecting material that enhances understanding.</p> <p>Student uses language that creates a strong, positive reaction in audience.</p> <p>Student creates tools, techniques, or paradigms that effectively achieve the desired goal.</p>
<p><b>Application</b></p> <p>The student uses this material, understanding, and/or skill in new situations.</p>	<p>Ability to apply theories, principles, and/or skills to new situations, settings, or problems not demonstrated.</p> <p>Student is not able to modify theories, products, behaviors, or skills to fit new or changed environment.</p>	<p>Student demonstrates an ability to apply theories, principles, and/or skills to new situations, settings, or problems.</p>	<p><i>In addition to Proficient criteria:</i></p> <p>Student actively seeks new environment and situations to apply theories, principles, and/or skills.</p> <p>Student provides multiple examples of how theory, principals, or skill can be applied.</p>
<p><b>Analysis</b></p> <p>The student breaks down this material and/or skill into its component parts so that its structure can be understood.</p>	<p>Student does not demonstrate a clear understanding of the rules, definitions, laws, concepts, theories, and principals of topic or skill under study.</p> <p>Analysis does not include diagrams, models, timelines, illustrations, or step-by-step progression of object/principal/problem under study.</p>	<p>Student demonstrates a clear understanding of the rules, definitions, laws, concepts, theories, and principals of topic or skill under study.</p> <p>Analysis includes diagrams, models, timelines, illustrations, or step-by-step progression of object/principal/problem under study.</p> <p>The student can identify relationships between ideas, data sets, and phenomena.</p>	<p><i>In addition to Proficient criteria:</i></p> <p>Student uses his/her analysis to teach the definitions, laws, concepts, theories, and principals under study.</p> <p>Student and/or audience is able to differentiate between similar definitions, laws, concepts, theories, and principals.</p> <p>The student can differentiate between correlation and cause and effect.</p>

<p><b>Evaluation</b></p> <p>The student judges the quality (based on both subjective and objective standards) of the material, object, or performance.</p>	<p>Student does not demonstrate understanding of the criteria used for evaluation.</p> <p>Student does not defend his/her evaluation (critique).</p> <p>Evaluation is not supported by reference to standards.</p> <p>Evaluation does not include comparison and contrast to other ideas/objects/materials.</p>	<p>Student demonstrates understanding of the criteria used for evaluations.</p> <p>Student is able to defend his/her evaluation (critique).</p> <p>Evaluation is supported by reference to standards.</p> <p>Evaluation includes comparison and contrast to other ideas/objects/materials.</p>	<p><i>In addition to Proficient criteria:</i></p> <p>Evaluation includes references (comparison/contrast) to three or more objects/ideas/materials.</p> <p>Student creates clearly defined criteria (e.g. rubric, standards, guidelines) for evaluation.</p>
<p><b>Synthesis</b></p> <p>The student combines more than one object or idea and forms a new, cohesive whole.</p>	<p>Synthesis does not successfully integrate ideas, images, and/or objects to form a cohesive whole.</p> <p>Student does not summarize his/her thinking during the process of synthesis.</p> <p>Combination of elements is not logical and/or verifiable.</p>	<p>Synthesis integrates ideas, images, and/or objects to form a cohesive whole.</p> <p>Student is able to summarize his/her thinking during the process of synthesis.</p> <p>Combination of elements is logical and justified.</p>	<p><i>In addition to Proficient criteria:</i></p> <p>Synthesis is unique.</p> <p>Synthesis shows careful planning and attention to how disparate elements fit together.</p> <p>Student is able to create new synthesis based on changing circumstances, input, or environment.</p> <p>Combination of elements is verified.</p>

*"Critical Thinking" is adapted from materials provided by Napa New Technology High School, Napa, California,, 2001-2002.*

## Math Common Core Standards with Next Generation Assessments

### **Expressions and Equations - Solve real-life and mathematical problems using numerical and algebraic expressions and equations.**

Next Generation Assessment: A graphic designer is creating a poster for an art exhibition. The width of the poster will be 9 inches less than the length, and the perimeter of the poster will be greater than 74 inches and less than 110 inches.

- a) Write an inequality to show the possible lengths, in inches, of the graphic designer's poster. Don't forget to define the variables.
- b) Solve the inequality and graph the solution set on a number line.
- c) Write a one-paragraph interpretation of what the solution means for the graphic designer. Explain how you came up with the inequality, how you solved it, and what the graph represents.

### **Algebra: Arithmetic with Polynomials and Rational Expressions - Use polynomial identities to solve problems**

Next Generation Assessment: A carpenter is building a ramp for a shed. He models his work using right triangles, where the ramp is the hypotenuse of the triangle.

The carpenter knows that three integers  $a$ ,  $b$ , and  $c$ , that satisfy the equation  $a^2 + b^2 = c^2$  are called Pythagorean triples. He also knows that there is a way to generate all the Pythagorean Triples.

He defines the variable as shown below:

$$a = n^2 - m^2 \quad b = 2nm \quad c = n^2 + m^2$$

where  $n$  and  $m$  are integers and  $n > m$

Write a proof to show that the three integers ( $a$ ,  $b$ ,  $c$ ) as defined above always form a Pythagorean triple. Explain your reasoning.

Select values for  $n$  and  $m$  to determine 5 sets of Pythagorean triples. Check that your values for  $a$ ,  $b$ , and  $c$  hold true in the Pythagorean Theorem

### **Expressions and Equations - Analyze and solve linear equations and pairs of simultaneous linear equations.**

Product  
Performance  
Assessment

## Reading Standards for Literacy in History/Social Studies with NGA

**Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.**

Next Generation Visit the Electoral College's website at

Assessment: <http://www.archives.gov/federal-register/electoral-college/>.

Analyze the information on how the Electoral College works, and look at the statistics on the three most recent president elections, determining how the Electoral College vote and the popular vote differ. Then compose an editorial for your school or local newspaper identifying the pros and cons of the Electoral College. Decide whether you support the use of the Electoral College in presidential elections, and give reasons why or why not, based on the statistics you have examined.

**Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.**

Next Generation

Assessment:

Theodore Geisel, also known as Dr. Seuss, created a number of political cartoons during and about World War II. Visit this website and choose one of Geisel's cartoons to analyze: <http://orpheus.ucsd.edu/speccoll/dspolitic/Frame.htm>. Write a brief analysis of the cartoon, explaining how the historical context informs the content of the cartoon.

Answer these questions in your analysis:

1. What symbols and metaphors does the artist use?
2. Does the artist use visual distortion? What is its effect?
3. Is there irony in the words or images of the cartoon?
4. Does the artist use stereotyping or caricature? What effects do they have?

Then create your own political cartoon, focusing on a recent political event. Use some of the methods you found in Geisel's cartoon to create humor of your own.

**Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.**

**Product  
Performance  
Assessment**