

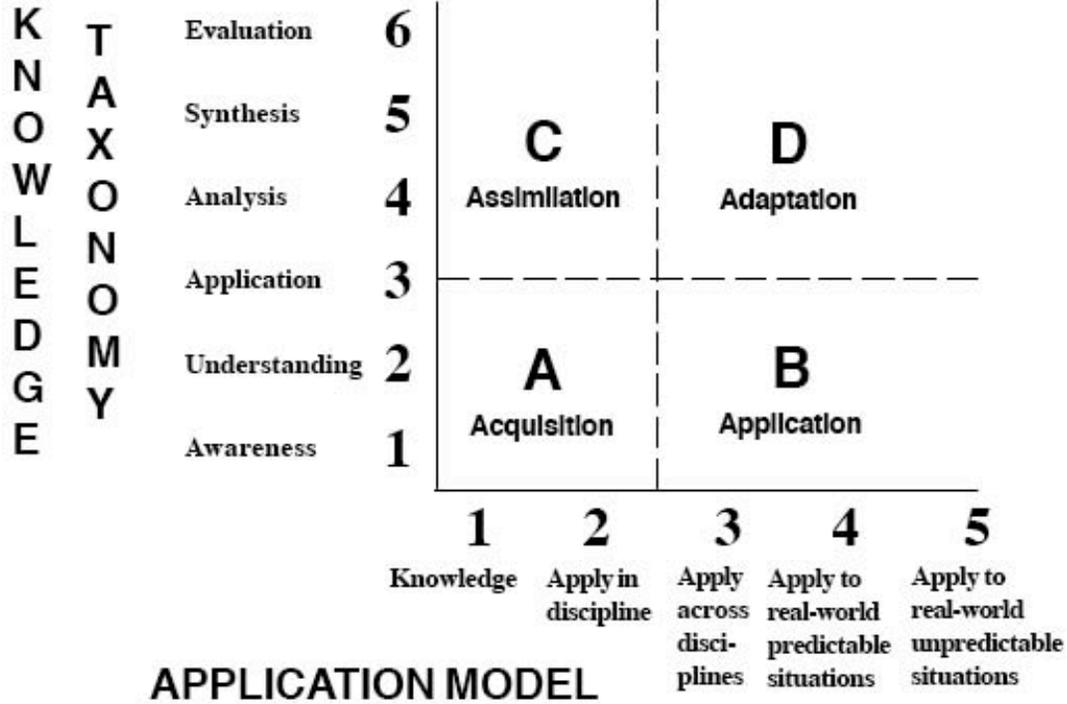


Teaching for Rigor and Relevance

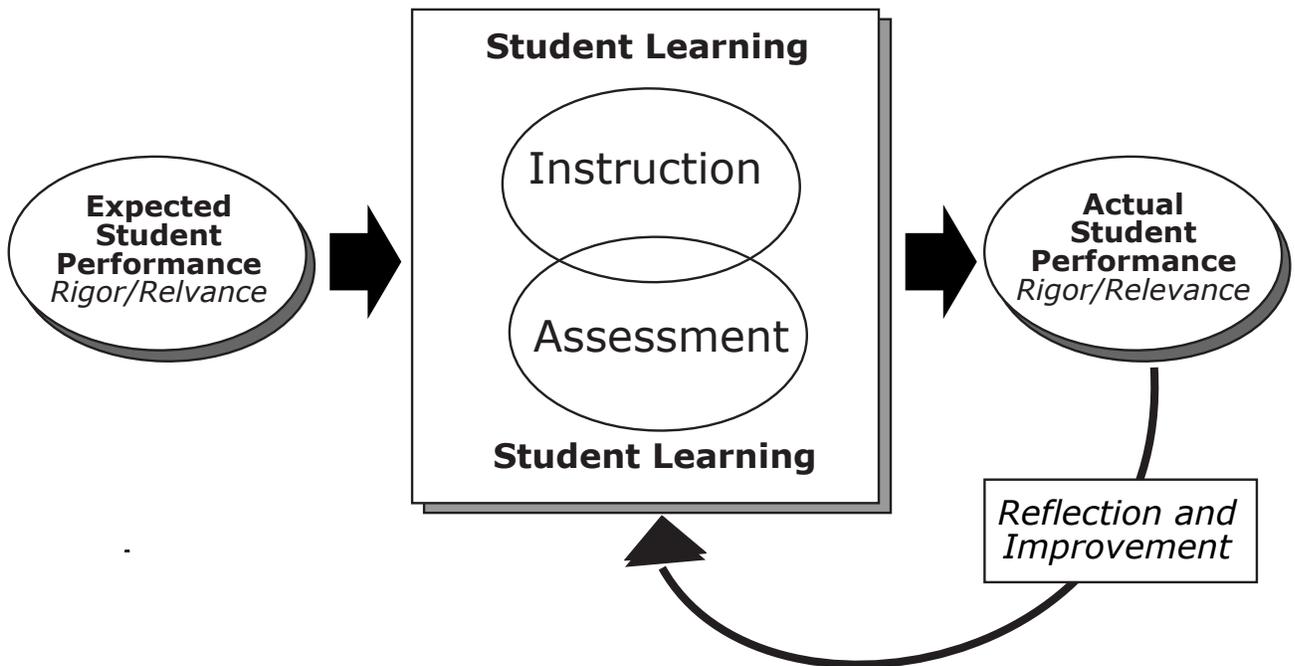
Richard D. Jones
Senior Consultant
email: rdj@nycap.rr.com

International Center for Leadership in Education
1587 Route 146, Rexford, NY 12148
(518) 399 2776
<http://www.LeaderEd.com>

Rigor/Relevance Framework



Rigorous and Relevant Instruction



Example of Student Performance in Application Model

Application Model

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

Public Speaking

Application Level

- 1 List characteristics of a good speech
- 2 Give a presentation to a class
- 3 Make an oral defense of a senior exhibition or project
- 4 Present a point of view on an issue at a public meeting
- 5 Respond to questions as a student representative at a board of education meeting

Application Level

Subject

1

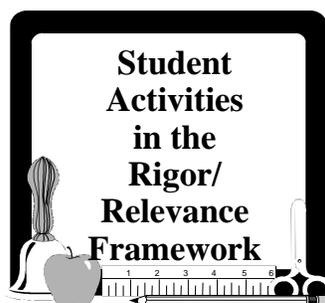
2

3

4

5

MATHEMATICS



MIDDLE LEVEL EXAMPLES

6

Quadrant C Assimilation

- Measure interior angles of polygons and discover the relationship between number of sides and sum of angles.
- Graph the perimeters and areas of squares of different sizes.
- Express probabilities as fractions, percents, or decimals.
- Evaluate equivalency and relationship of decimal and fractions.
- Determine the largest area for a fixed perimeter.
- Fill in missing numbers for ordered pairs for an algebraic function.
- Evaluate objects for similarity and congruence.
- Estimate sums of complex fractions.

5

4

3

2

1

Quadrant D Adaptation

- Hold a competition to determine when using a calculator or doing mental math is most efficient.
- Obtain historical data about local weather to estimate amount of snow, rain, or sun during a given season of the current year.
- Use graphing calculators and computer spreadsheets to organize and analyze data.
- Test consumer products such as absorbency of the paper towels, devise a scale, and illustrate data graphically.
- Plan a large school event and calculate resources (food, decorations, etc.) needed and costs.

Quadrant A Acquisition

- Select computational operation to solve word problems
- Calculate volume of regular solids.
- Measure angles with a protractor.
- Find and measure the sides and angles of a right triangle using the Pythagorean theorem and trigonometric ratios.
- Organize and display collected data, using tables, charts, or graphs.
- Use basic properties of equality to solving equations with one variable.
- Plot the coordinates for quadrilaterals on a grid.

Quadrant B Application

- Make a scale drawing of the classroom.
- Calculate percents of daily requirements met through a typical school lunch.
- Calculate potential combinations of a group of variables, such as wardrobe components, and estimate the probability of any one combination being picked at random.
- Calculate percentages of advertising in a newspaper.
- Play a simulated baseball game and calculate statistics.
- Calculate paint needed for a summer business painting houses.

1

2

3

4

5

Rigor/Relevance Framework ⁵

Worksheet

KNOWLEDGE TAXONOMY

Evaluation 6
 Synthesis 5
 Analysis 4
 Application 3
 Comprehension 2
 Awareness 1

		C - Assimilation		D - Adaptation		
		A - Acquisition		B - Application		

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



APPLICATION MODEL

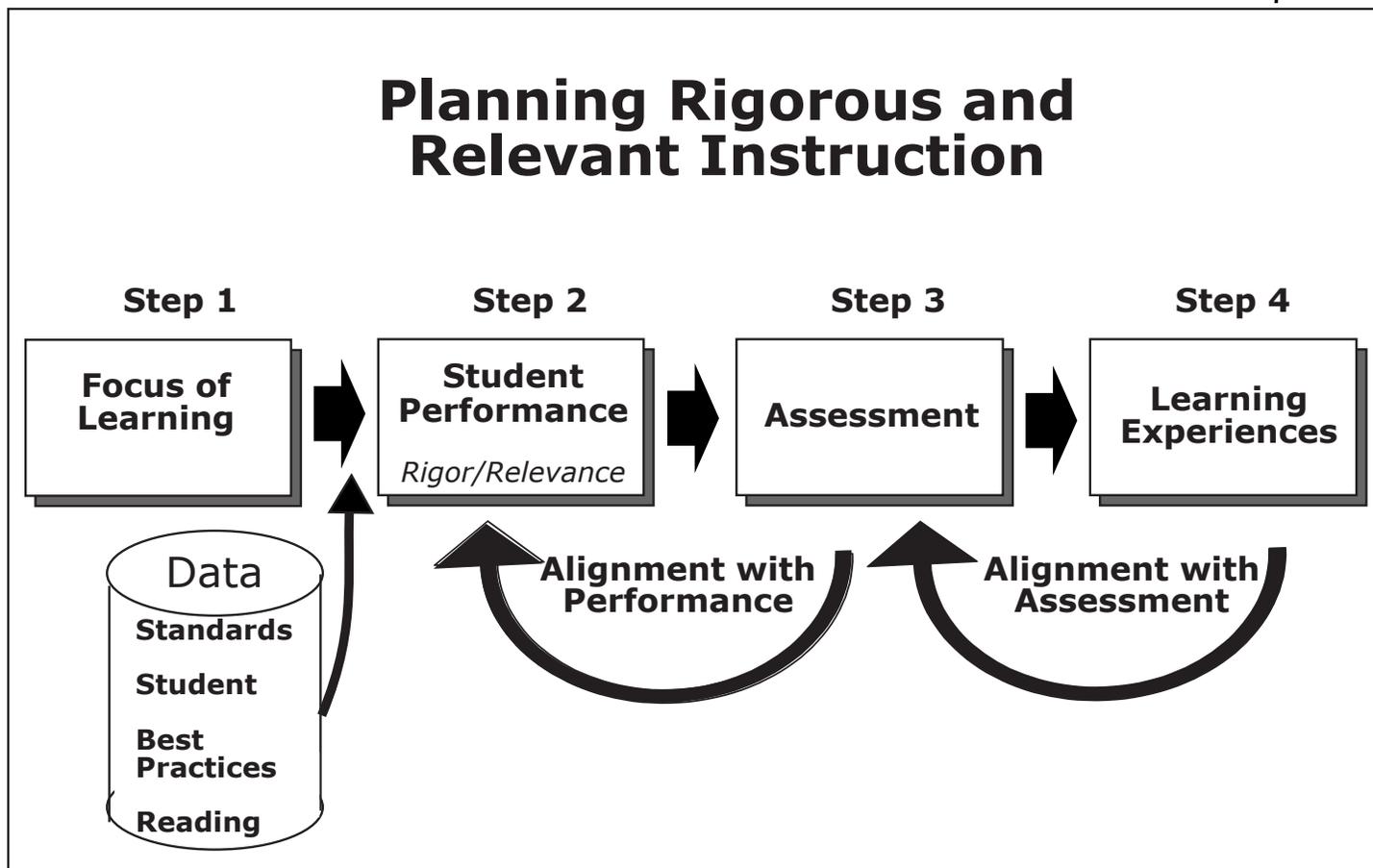
Test Question Evaluation Worksheet

Directions: For each of the following test questions, indicate the appropriate level of Rigor and Relevance (A, B, C, D).

R/R Level

- | | |
|--|--|
| <p>1 The phrase “x to the fifth power” is represented by which mathematical expression?
A. x^5 B. 5^x C. $5x$ D. $5 + x$</p> | |
| <p>2 The pressure (voltage) of a battery for a bus or truck employing a diesel engine is usually 24V, if you use two 12V batteries how should they be connected to produce the necessary 24 volts?</p> | |
| <p>3 The wholesale price of books bought by a book seller increase from \$3.00 to \$3.50. He had been selling the books at \$4.00. What price must he sell the books at to make the same percentage profit.?</p> | |
| <p>4 Name the five bases that make up Deoxyribonucleic acid (DNA) and are noted by the letters A,T,G,C.</p> | |
| <p>5 Your boss tells you to find the best deal in cellular phone service. Economy service is \$19.95 per month plus 31¢ per minute of airtime. Silver service is \$40.95 per month plus 16¢ per minute. Gold service is \$80.95 per month with unlimited airtime. Define variables. Write equations. Make tables and graphs. Find slopes and points of intersection. For each plan, how much airtime will \$100 buy? For what range of airtime is each plan cheapest?</p> | |
| <p>6 After reading Chaucer’s “Prologue” to <i>The Canterbury Tales</i>. Select two characters you find intriguing from the “Prologue,” and create a written dialog between them. Stress both the differences and commonalties so that the dialog reveals two distinct personalities.</p> | |
| <p>7 Which of these substances is found in every living cell?
A. protein B. chlorophyll C. cellulose D. starch E. hemoglobin</p> | |
| <p>8 Identify one controversial domestic issue that has divided the American people and explain the historical background, points of view of those who supported and opposed this issue and government action that was taken to address this issue.</p> | |
| <p>9 What are the five vital signs:
(A) skin color, pulse, blood pressure, temperature, respiration
(B) bleeding, pulse, temperature, location of injury, level of responsiveness
(C) temperature, pulse, blood pressure, respiration, level of responsiveness
(D) location of injury, pulse, blood pressure, respiration, level of responsiveness</p> | |
| <p>10 After examining and comprehending the Bill of Rights, rewrite an amendment or create a new one for the 21st century.</p> | |

ABBADCACBD



Questions

Step 1 - Focus - What defines or drives the learning experience?

Step 2 - Student Performance - What are students expected to know, do or be like and at what level of rigor and relevance?

Step 3 - Assessment - How will you assess desired student performance?

Step 4 - Learning Experience - What activities will enable students to achieve student performance?

Examples of Student Work for Real World Instruction

- Advertisement
- Audiotape
- Brochure
- Business
- Chart
- Community service
- Construction
- Contract
- Correspondence
- Debate
- Demonstration
- Design
- Diagram
- Discussion
- Display
- Dramatization
- Drawing
- Editorial
- Exhibit
- Experiment
- Field guide
- Graph
- Interview
- Invention
- Journal
- Letter
- Log
- Machine
- Magazine
- Manufacturing process
- Map
- Memo
- Mnemonic
- Model
- Mural
- News report
- Newspaper
- Oral history
- Oral report
- Painting
- Petition
- Photo album
- Play
- Poster
- Production process
- Proposal
- Questionnaire
- Questions
- Rap
- Relief map
- Research report
- Resume
- Rules
- Scale model
- Scrapbook
- Script
- Sculpture
- Sketch
- Skit
- Slide show
- Software application
- Solution
- Song
- Speech
- Story
- Survey
- Taxonomy
- Teach a lesson
- Test
- Videotape


Worksheet

Practice Linking Standards and Student Work

Directions: For each of the standards, list student work that would enable students to learn that standard. Start with a generic type of student work and complete the item with a specific task related to that area of learning.

Example:

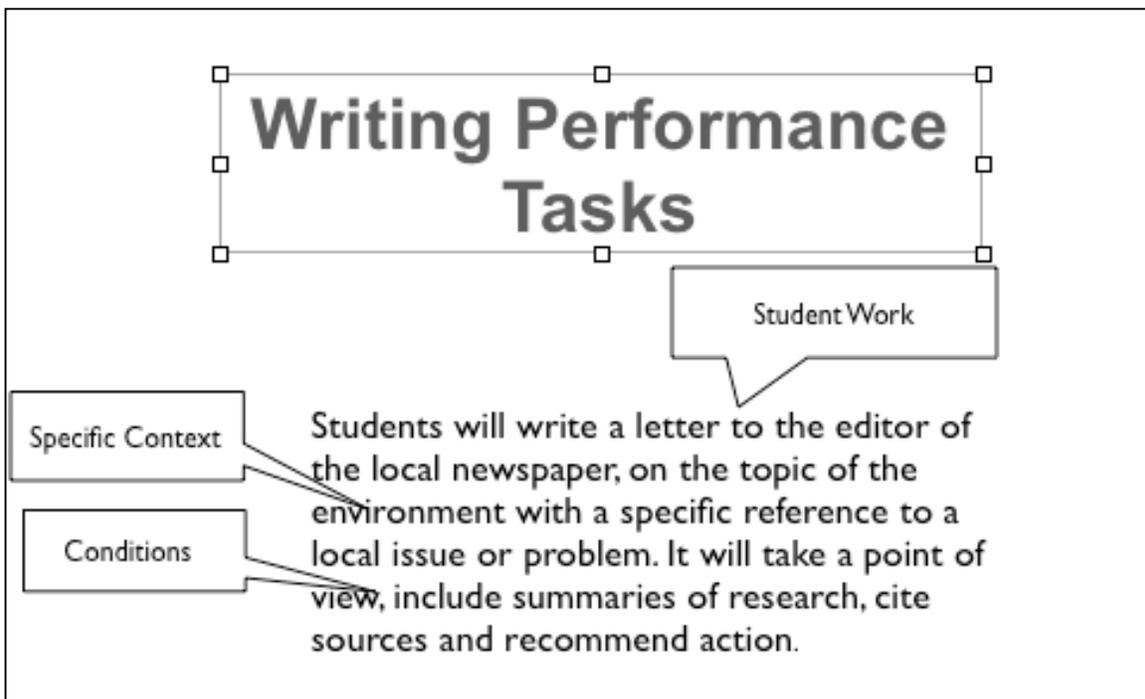
Standard/Topic

use maps and scale drawings to represent real objects or places

Student Work

construct a scale model of a house

Standard/Topic	Student Work
Apply in writing the rules of grammar, punctuation and spelling	
Gather information from a variety of sources and summarize and analyze	
Follow oral directions	
Know how to decipher unfamiliar words	
Perform operations with numbers including decimals, ratios, percents, and fractions	
Understand characteristics of parallel lines	
Understand best procedures for statistical data collection, organization, and display	
Understand how and why rotation and revolution of Earth affect day, seasons, and weather	
Understand systems of human body	
Make observation of the local environment using senses and instruments	



A performance task is a description of how a student is expected to demonstrate understanding, knowledge and skills. The task may be a product, performance or extended writing that requires rigorous thinking and relevant application. It is usually written in the third person describing the learning to other educators.

Performance tasks include;

- ◆ student work that will be produced or performed
- ◆ whether group or individual
- ◆ Specific learning context
- ◆ resources students will be provided or have to acquire
- ◆ setting where students will complete the work
- ◆ conditions (often real world) under which the work will be done

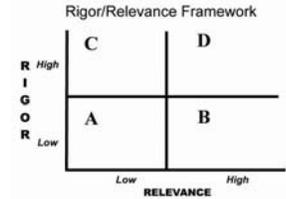
Performance tasks usually do not include;

- ◆ assessment. A performance-based implies but does not specify how the performance will be assessed.
- ◆ specific direction to the student
- ◆ specific equipment list
- ◆ homework or reading assignments

RIGOROUS AND RELEVANT STUDENT PERFORMANCES



Title



Focus

Identify subject, course, unit and students to be served

Student Learning

Identify concepts, knowledge, skills and behaviors

Performance Task

Describe the student work used to demonstrate learning

Standards

Link this lesson to state or national standards or International Center Essential Skills

Source	
Subject(s)	
Standards	

Scoring Guide

Attach copies of scoring guide or rubric to assess performance task

Exemplars (optional)

Attach copies, descriptions or images of exemplary student work

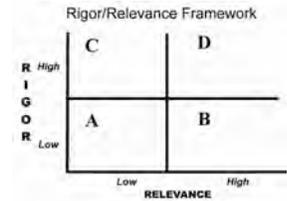
Lesson Plan (optional)

Attach copies of teacher procedures and student activities

RIGOROUS AND RELEVANT STUDENT ASSESSMENTS



Title



Performance Task

Describe the student work used to demonstrate learning

Type of Scoring Guide *Select Type*

Holistic Checklist Analytic, Mini-rubric

Criteria

List major criteria that will be used to assess student performance

Scoring Guide

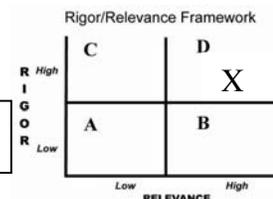
Draft Scoring Guide for this Performance Task

RIGOROUS AND RELEVANT LESSONS



Title

Earth Day Letter



Focus

Identify subject, course, unit and students to be served

Sixth Grade Interdisciplinary
English Language Arts - Unit on Writing Conventions
Science – Unit on Environment

Student Learning

Identify concepts, knowledge, skills and behaviors

Concepts	Skills	Knowledge	Behaviors
<ul style="list-style-type: none"> ◆ Point of View ◆ Research ◆ Endangered species ◆ Pollution ◆ Individual responsibility 	<ul style="list-style-type: none"> ◆ Writing w/ correct grammar ◆ Writing with Point of View ◆ Citing authentic sources 	<ul style="list-style-type: none"> ◆ Environmental Advocacy Groups ◆ Major Environmental Issues ◆ Local Environmental Issues 	<ul style="list-style-type: none"> ◆ Recycling ◆ Protecting the Environment

Performance Task

Describe the student work used to demonstrate learning

Students will write a letter to the editor of the local newspaper, on the topic of the environment with a specific reference to a local issue or problem. It will take a point of view, include summaries of research, cite sources and recommend action.

Standards

Link this lesson to state or national standards or Essential Skills

Source	Essential Skills
Subject	English Language Arts and Science
Standards	(e1) Apply in writing the rules and conventions of grammar, usage, punctuation, paragraphing and spelling. (e3) Gather information from a variety of sources, including electronic sources, and summarize, analyze, and evaluate its use for a report. (s6) Understand how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature by introducing pollutants into the environment. (s10) Understand the human impact on the environment through pollution (air, water, and soil), and ways to improve it through education, research, laws, and conservation.

Scoring Guide

Attach copies of scoring guide to assess student performance

Lesson Plan

Attach copies of teacher procedures and student activities -Optional

Sample Analytic Scoring Guide 3

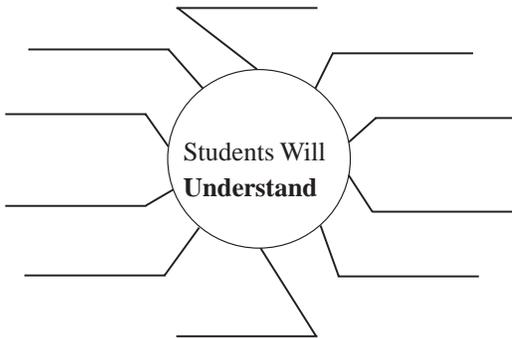
Letter to the Editor

Criteria	1	2	3	4	Your Score
Ideas	The letter seemed to be a collection of unrelated sentences. It was very difficult to figure out what the letter was about.	Ideas were somewhat organized, but were not very clear. It took more than one reading to figure out what the letter was about.	Ideas were expressed in a pretty clear manner, but the organization could have been better.	Ideas were expressed in a clear and organized fashion. It was easy to figure out what the letter was about.	1
					2
					3
					4
Letter	Letter is inappropriately informal and confusing to read. No attempt has been made to engage the reader with a logical presentation of facts.	Letters is clear presentation of facts, and/or an appropriately formal writing style.	Letter is logical and clear presentation of facts, and formal writing style.	Letters is logical and clear presentation of facts, and an appropriately formal writing style. Letter is interesting to read and hold the reader's attention.	1
					2
					3
					4
Layout	Design is messy and unattractive. Does not make good use of available space. Poor balance of text and graphics.	Design is inconsistent. Some parts are attractive and space efficient, but other parts are not. Inconsistent or poor balance between text and graphics.	Design is mostly attractive and space efficient. Good balance of text and graphics, for the most part.	Design is attractive and space efficient. Excellent balance of text and graphics throughout.	1
					2
					3
					4
Mechanics	Text contains many spelling/grammar errors. Sentences seem disconnected, and there is carelessness throughout.	Text contains some spelling/grammar errors. Little logical structure or flow to sentences. Evidence of carelessness in writing.	Grammar and spelling are nearly flawless. Logical sequence apparent. Some wording is careless. Inconsistent in style.	Grammar and spelling are flawless and the flow provides a logical pathway of ideas. Consistent and engaging style throughout.	1
					2
					3
					4

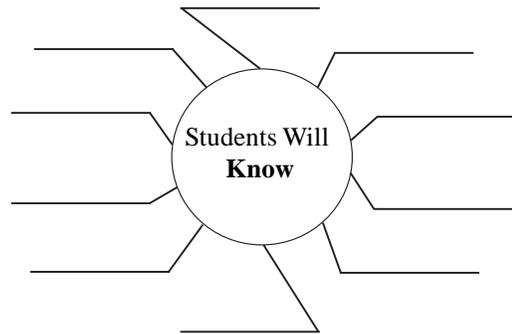
Summary of Student Performance

Unit Focus: _____

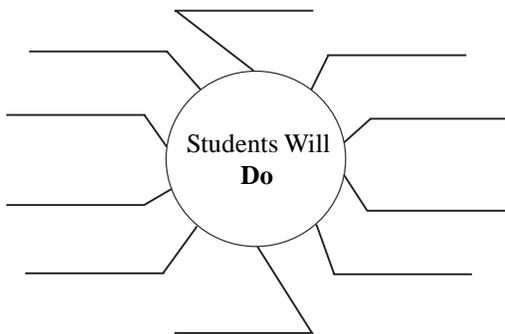
Concepts (Big Ideas)



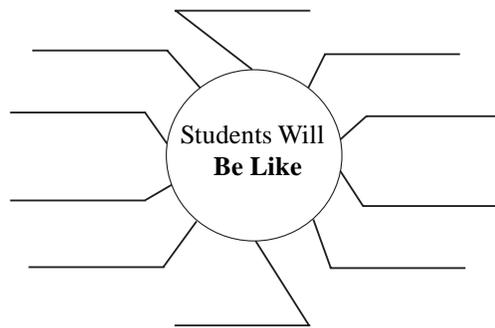
Declarative Knowledge



Skills (Thinking and Performing)



Behaviors (Work Habits)



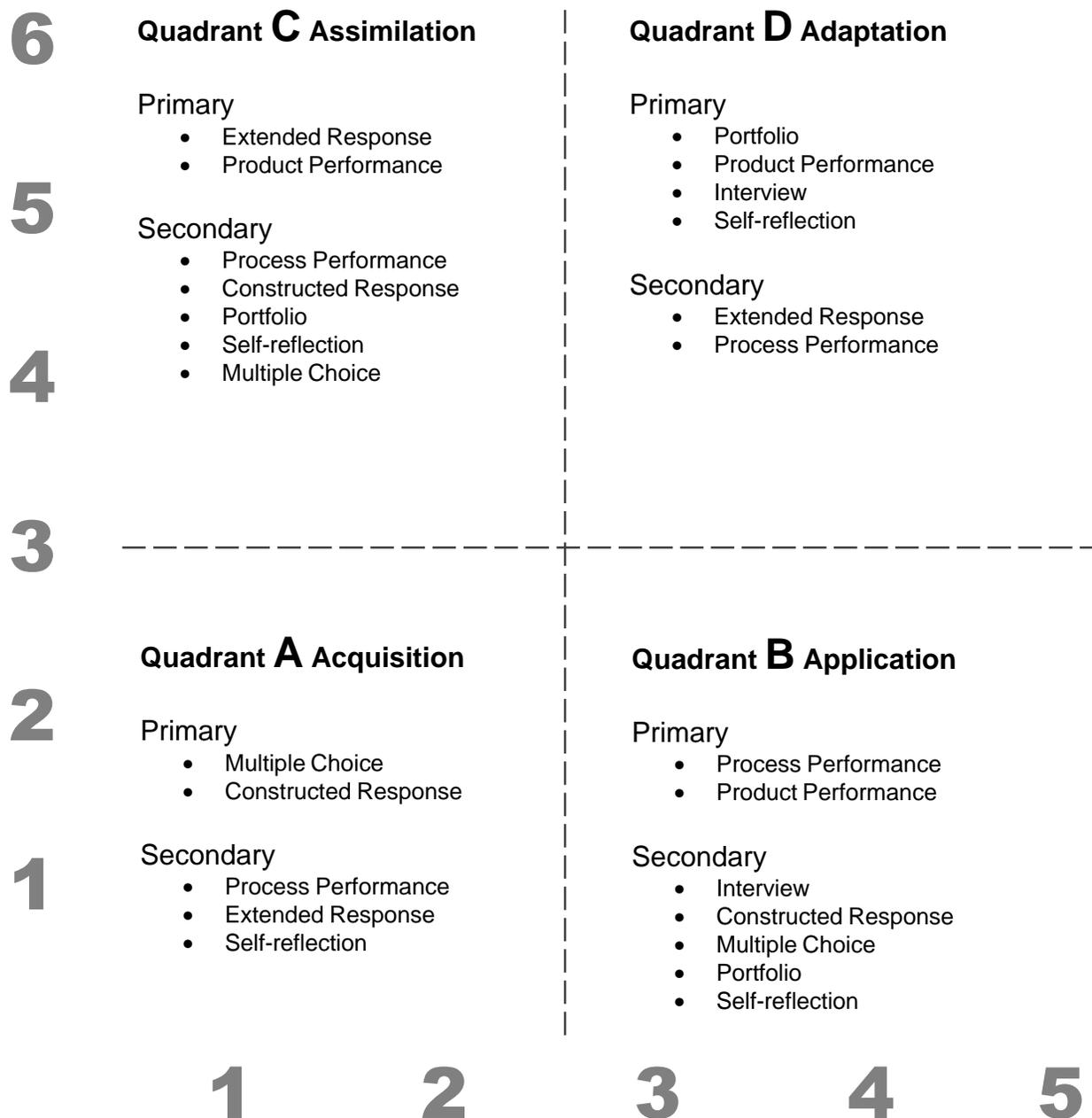
Test Question Development

Directions: In the first box, develop a test question. Use the second box to revise the question at a higher level of knowledge and/or application.

Test Question

Revised Question

Relationship of Assessments to the Rigor/Relevance Framework



Primary = Best Match

Secondary = Also Appropriate

Checklist for Rigorous and Relevant Teaching and Learning

The teaching design

- Is planned using data on students and curriculum.
- Is clearly linked to priority state standards.
- Has an expectation for levels of rigor and relevance.
- Uses appropriate assessments aligned with the rigor and relevance of expectations.
- Is clearly guided by big ideas and essential questions.
- Uses strategies that are aligned with the rigor and relevance of expectations.
- Includes the knowledge and skills necessary for expected student performance.
- Uses authentic performance tasks calling for students to demonstrate their understanding and apply knowledge and skills.
- Uses clear evaluation criteria and performance standards evaluations of student products and performances.
- Uses a variety of resources. The textbook is only one resource among many.

The classroom

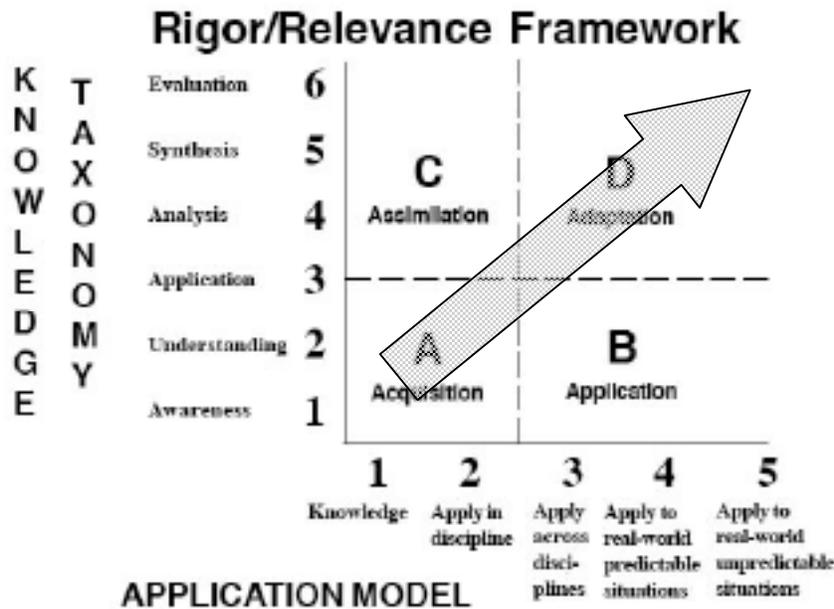
- Has student work and essential questions as central to classroom activities.
- Has high expectations and incentives for all students to achieve the expected performance.
- Has a culture that treats students and their ideas with dignity and respect.
- Displays evaluation criteria or scoring guides.
- Has samples of high-quality student work on display.

The teacher

- Informs students of the expected performance, essential questions, performance requirements, and assessment criteria at the beginning of the lesson or unit.
- Engages students' interest when introducing a lesson.
- Uses a variety of strategies that match the expected level of rigor and relevance and learning styles of students.
- Facilitates students' active construction of meaning (rather than simply telling).
- Effectively uses questioning, coaching, and feedback to stimulate student reflection.
- Facilitates student acquisition of basic knowledge and skills necessary for student performance.
- Differentiates instruction to meet individual student needs.
- Adjusts instruction as necessary on reflection and feedback from students.
- Uses information from ongoing assessments to check for student learning and misconceptions along the way.
- Uses a variety of resources to promote understanding.

The students

- Can describe the goals (student performance) of the lesson or unit.
- Can explain what they are doing and why (i.e., how today's work relates to the larger unit or course goals).
- Are engaged throughout the lesson or unit.
- Can describe the criteria by which their work will be evaluated.
- Are engaged in activities that help them to apply what they have learned.
- Demonstrate that they are learning the background knowledge and skills that support the student performance and essential questions.
- Have opportunities to generate relevant questions.
- Are able to explain and justify their work and their answers.
- Use the criteria or scoring guides to revise their work.



Ways to Increase Rigor and Relevance

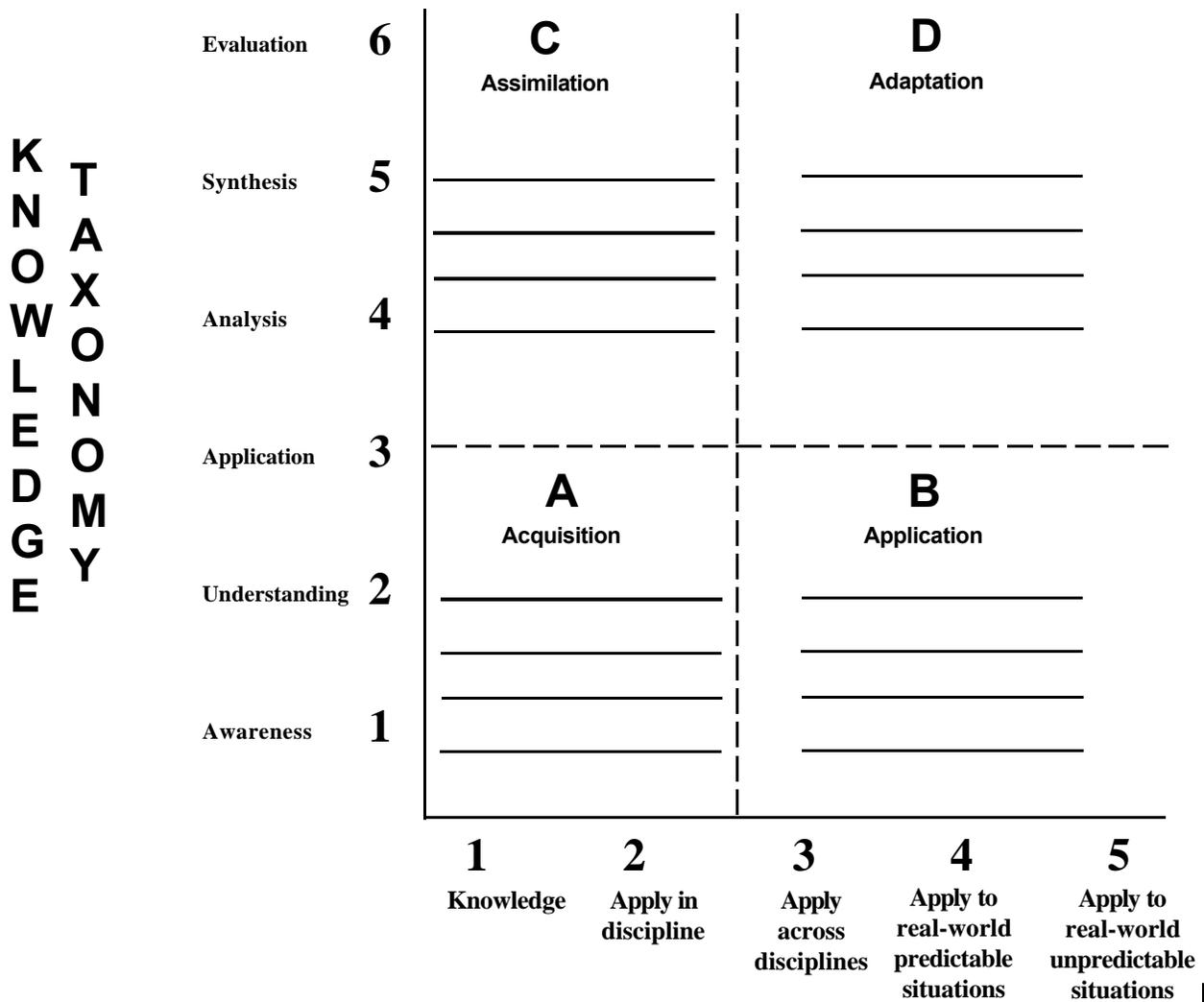
- ◆ Challenging Assessments
- ◆ Interdisciplinary Instruction
- ◆ Reading in the Content Area
- ◆ Relationships
- ◆ Use of Technology
- ◆ New Teaching Ideas
- ◆ Peer Teaching Observations
- ◆ Peer Learning Experience Review
- ◆ Action Research
- ◆ Continuous Professional Development



What Works Best?

Certain instructional strategies work better than others depending on the quadrant of the Rigor/Relevance Framework in which the learning objective falls. List two or three instructional strategies that you think would be effective in each of the four quadrants.

Rigor/Relevance Framework



APPLICATION MODEL

Instructional Strategies and Rigor/Relevance Framework

Strategy	Acquisition Quadrant A	Application Quadrant B	Assimilation Quadrant C	Adaptation Quadrant D
Brainstorming	★★	★	★★★	★★★
Community Service	★	★★★	★★	★★★
Compare and Contrast	★★	★	★★★	★★
Cooperative Learning	★★	★★★	★★	★★★
Creative Arts	★	★★	★★★	★★★
Demonstration	★	★★★	★	★★
Games	★★★	★★	★	★
Group Discussion	★★	★★	★★	★★
Guided Practice	★★★	★★	★★	★
Inquiry	★	★★	★★★	★★★
Instructional Technology	★★	★★★	★★★	★★★
Internship	★	★★★	★★	★★★
Lecture	★★★	★	★★	★
Literature	★★	★★	★★★	★★★
Memorization	★★★	★★	★★	★

KEY ★★★ Ideal Strategy ★★ Appropriate Strategy ★ Least Appropriate Strategy

Instructional Strategies and Rigor/Relevance Framework, continued

Strategy	Acquisition Quadrant A	Application Quadrant B	Assimilation Quadrant C	Adaptation Quadrant D
Note Taking/Graphic Organizers	★★	★★	★★	★★
Presentations/ Exhibitions	★	★★	★★	★★★
Problem-based Learning	★★	★★★	★★	★★★
Project Design	★	★★★	★	★★★
Recognition and Rewards	★★★	★★	★★	★★
Research	★★	★	★★★	★★★
Review and Re-teaching	★★★	★★★	★	★
Setting Objectives and Advance Organizers	★★	★★	★★	★★
Simulation/Role Playing	★★	★★★	★★	★★★
Socratic Seminar	★	★	★★★	★★★
Teacher Questions	★★	★	★★★	★★★
Total Physical Response	★★★	★★★	★	★
Video	★★	★★★	★★	★★
Work-based Learning	★★	★★★	★★	★★★
Writing	★★	★★	★★★	★★★

KEY ★★★ Ideal Strategy ★★ Appropriate Strategy ★ Least Appropriate Strategy