# Rigor/Relevance Framework™

The Rigor/Relevance Framework is a tool developed by staff of the International Center for Leadership in Education to examine curriculum, instruction, and assessment. The Rigor/Relevance Framework is based on two dimensions of higher standards and student achievement.

First, there is a continuum of knowledge that describes the increasingly complex ways in which we think. The Knowledge Taxonomy is based on the six levels of Bloom's Taxonomy:

(1) awareness
(2) comprehension
(3) application
(4) analysis
(5) synthesis
(6) evaluation.
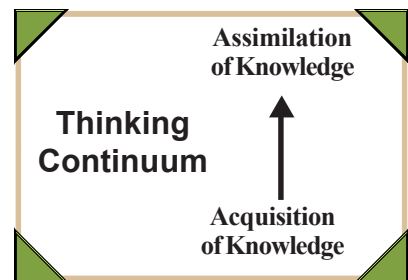
The low end of this continuum involves acquiring knowledge and being able to recall or locate that knowledge in a simple manner. Just as a computer completes a word search in a word processing program, a competent person at this level can scan through thousands of bits of information in the brain to locate that desired knowledge.

The high end of the Knowledge Taxonomy labels more complex ways in which individuals use knowledge. At this level, knowledge is fully integrated into one's mind, and individuals can do much more than locate information. They can take several pieces of knowledge and combine them in both logical and creative ways. Assimilation of knowledge is a good way to describe this high level of the thinking continuum. Assimilation is often referred to as a higher-order thinking skill: at this level, the student can solve multistep problems and create unique work and solutions.
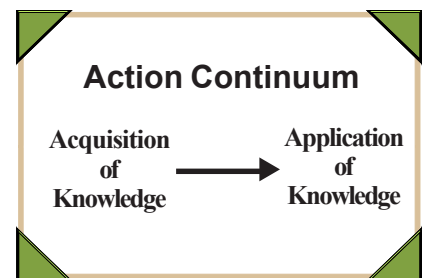
The second continuum, created by Dr. Willard R. Daggett, is known as the Application Model. The five levels of this action continuum are:

(1) knowledge in one discipline
(2) apply in discipline
(3) apply across disciplines
(4) apply to real-world predictable situations
(5) apply to real-world unpredictable situations

The Application Model describes putting knowledge to use. While the low end is knowledge acquired for its own sake, the high end signifies action — use of that knowledge to solve complex real-world problems and to create projects, designs, and other works for use in real-world situations.

RIGOR/RELEVANCE FRAMEWORK™

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

KNOWLEDGE TAXONOMY

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

APPLICATION MODEL

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

The Rigor/Relevance Framework has four quadrants.

Quadrant A represents simple recall and basic understanding of knowledge for its own sake. Quadrant C represents more complex thinking but still knowledge for its own sake. Examples of quadrant A knowledge are knowing that the world is round and that Shakespeare wrote *Hamlet*.

Quadrant C embraces higher levels of knowledge, such as knowing how the U.S. political system works and analyzing the benefits and challenges of the cultural diversity of this nation versus other nations.

Quadrants B and D represent action or high degrees of application. Quadrant B would include knowing how to use math skills to make purchases and count change. The ability to access information in wide-area network systems and the ability to gather knowledge from a variety of sources to solve a complex problem in the workplace are types of quadrant D knowledge.

Each of these four quadrants can also be labeled with a term that characterizes the learning or student performance.

Quadrant A — Acquisition

Students gather and store bits of knowledge and information. Students are primarily expected to remember or understand this acquired knowledge.

Quadrant 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.

Quadrant C — Assimilation

Students extend and refine their acquired knowledge to be able to use that knowledge automatically and routinely to analyze and solve problems and create unique solutions.

Quadrant D — Adaptation

Students have the competence to think in complex ways and also apply knowledge and skills they have acquired. 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.

A Fresh Approach

The Rigor/Relevance Framework is a fresh approach to looking at curriculum standards and assessment. It is based on traditional elements of education yet encourages movement to application of knowledge instead of maintaining an exclusive focus on acquisition of knowledge.

The Framework is easy to understand. With its simple, straightforward structure, it can serve as a bridge between school and the community. It offers a common language with which to express the notion of a more rigorous and relevant curriculum and encompasses much of what parents, business leaders, and community members want students to learn. The Framework is versatile; it can be used in the development of instruction and assessment. Likewise, teachers can use it to measure their progress in adding rigor and relevance to instruction and to select appropriate instructional strategies to meet learner needs and higher achievement goals.

Here is an example involving technical reading and writing.

Quadrant A
Recall definitions of various technical terms.

Quadrant B
Follow written directions to install new software on a computer.

Quadrant C
Compare and contrast several technical documents to evaluate purpose, audience, and clarity.

Quadrant D
Write procedures for installing and troubleshooting new software.

Defining Rigor

Rigor refers to academic rigor — learning in which students demonstrate a thorough, in-depth mastery of challenging tasks to develop cognitive skills through reflective thought, analysis, problem-solving, evaluation, or creativity. Rigorous learning can occur at any school grade and in any subject. The Knowledge Taxonomy describes levels of rigor.

A versatile way to define the level of rigor of curriculum objectives, instructional activities, or assessments is the Knowledge Taxonomy Verb List (see page 6). The Verb List can be used either to create a desired level of expected student performance or to evaluate the level of existing curriculum, instruction or assessment.

An example of student performance at various levels follows. Notice each statement starts with a verb that comes from the appropriate section of the Knowledge Taxonomy Verb List. The expected achievement level for teaching about nutrition can vary depending on the purpose of the instruction. If a teacher only wants students to acquire basic nutritional knowledge, a student performance set at level one of two is adequate. If the instruction is intended to have a more significant impact on nutritional habits then some of the objectives need to be similar to levels four through six.

BASIC NUTRITION

Level	Performance
Level 1 – Knowledge	Label foods by nutritional groups
Level 2 – Comprehension	Explain nutritional value of individual foods
Level 3 – Application	Make use of nutrition guidelines in planning meals
Level 4 – Analysis	Examine success in achieving nutrition goals
Level 5 – Synthesis	Develop personal nutrition goals
Level 6 – Evaluation	Appraise results of personal eating habits over time

Note that each of the levels requires students to think differently. Levels four through six require more complex thinking than levels one through three.

When creating lesson plans and student objectives, selecting the proper word from the Knowledge Taxonomy Verb List can help to describe the appropriate performance. Simply start with a verb from the desired level and finish the statement with a specific description of that skill or knowledge area.

The Verb List can also be used to evaluate existing lesson plans, assessments, and instructional experiences. Looking for verbs and identifying their level will give a good indication of the level of student performance in that instruction.

Defining Relevance

Relevance refers to learning in which students apply core knowledge, concepts, or skills to solve real-world problems. Relevant learning is interdisciplinary and contextual. Student work can range from routine to complex at any school grade and in any subject. Relevant learning is created, for example, through authentic problems or tasks, simulation, service learning, connecting concepts to current issues, and teaching others. The Application Model describes the levels of relevance.

Identifying the level of relevance of curriculum objectives and instructional activities is a little more difficult than determining the Knowledge Taxonomy level because there is no verb list. However, just as the Knowledge Taxonomy categorizes increasing levels of thinking, the Application Model described increasingly complex applications of knowledge. Any student performance can be expressed as one of five levels of the Application Model. The Application Model Decision Tree can assist in setting the desired level of expected student performance in application (see pages 7-8) by asking the questions: Is it application? Is it real world? Is it unpredictable?

The Basic Nutrition example below is similar to the one in the Defining Rigor section in that it uses nutrition to describe student performance at various levels. Each level requires students to apply knowledge differently.

Similarly, the expected achievement level for teaching about nutrition can vary depending on the purpose of the instruction. If a teacher wants students only to acquire basic nutritional knowledge, a student performance set at level one is adequate. If the instruction is intended to have a significant impact on nutritional habits, then some of the objectives need to be at levels four and five.

Use of the Application Model Decision Tree can help to describe desired performance. Start by writing draft statements of student objectives and then use the Decision Tree to reflect on and revise these statements. The Decision Tree focuses on the three key characteristics that distinguish levels of the Application Model: application, real world, and unpredictability. The second page of the Decision Tree offers additional criteria to determine whether an objective meets the test of application, real world, and unpredictability.

The Application Model Decision Tree can also be used to evaluate existing lesson plans, assessments, and instructional experiences. Answer the questions to identify at which level of student performance that instruction or assessment is.

BASIC NUTRITION

Level	Performance
Level 1 – Knowledge in One Discipline	Label foods by nutritional groups
Level 2 – Application in One Discipline	Rank foods by nutritional value
Level 3 – Interdisciplinary Application	Make cost comparisons of different foods considering nutritional value
Level 4 – Real-world Predictable Situations	Develop a nutritional plan for a person with a health problem affected by food intake
Level 5 – Real-world Unpredictable Situations	Devise a sound nutritional plan for a group of 3-year-olds who are picky eaters

KNOWLEDGE TAXONOMY VERB LIST

1

KNOWLEDGE

arrange	match
check	name
choose	point to
find	recall
group	recite
identify	repeat
label	say
list	select
locate	write

2

COMPREHENSION

advance	interpret
calculate	outline
change	project
contemplate	propose
convert	reword
define	submit
explain	transform
extrapolate	translate
infer	vary

3

APPLICATION

adopt	manipulate
capitalize on	mobilize
consume	operate
devote	put to use
employ	relate
exercise	solve
handle	start
maintain	take up
make use of	utilize

4

ANALYSIS

assay	include
audit	inspect
break down	look at
canvass	scrutinize
check out	sift
deduce	study
dissect	survey
divide	test for
examine	uncover

5

SYNTHESIS

blend	develop
build	evolve
cause	form
combine	generate
compile	make up
compose	originate
conceive	produce
construct	reorder
create	structure

6

EVALUATION

accept	grade
appraise	judge
arbitrate	prioritize
assess	rank
award	rate
classify	reject
criticize	rule on
decide	settle
determine	weigh

Application Model Decision Tree

Directions: Select a task, application, or activity and then answer the following questions. See next page for clarification of the questions.

Is
it
application?

—— NO ———▶

Level 1
Knowledge in
one discipline

YES

Is the
application
real world?

–**NO**▶

Is more than
one school
subject
involved?

–**NO**▶

Level 2
Application in
one discipline

YES

YES ———▶

Level 3
Interdisciplinary
application

Is the
outcome
unpredictable?

——NO——▶

Level 4
Real-world
predictable
application

YES ————————▶

Level 5
Real-world
unpredictable
application
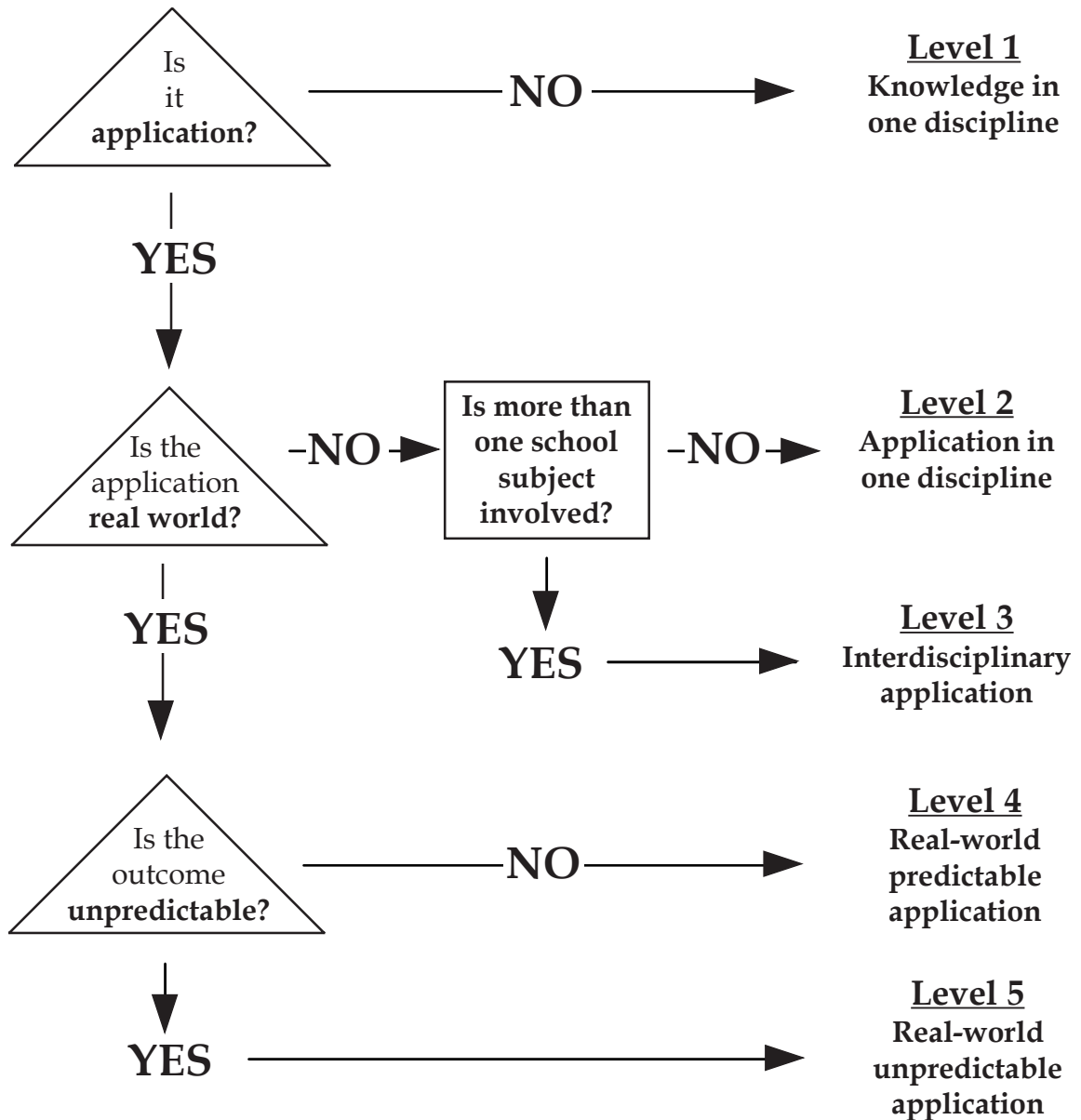
Application Model Decision Tree

Directions: Use the following statements to clarify where a task, application, or assessment belongs on the Application Model.

YES

Requires use of knowledge

Requires students actually to practice steps in a procedure

Uses previous knowledge to solve problems, create a design, or communicate information

Assesses performance

Is it application?

Requires only recall or understanding

Requires learning steps in a procedure

Requires memorization of facts or formulas

Assesses content knowledge

NO

YES

Application occurs in same way it is used by adults

Standards for performance are same as for adult roles

Students have access to real-world resources (tools, references, etc.)

Task must be completed in same time frame as real-world

Is the application **real world?**

Application occurs only in school

Lower standards of performance are acceptable

Resources are limited

Students have extended time to complete task

NO

YES

Application has uncertain results

Unknown factors involved (environment, people, time)

Students have individual and unique solutions to problems

Is the outcome **unpredictable?**

Application involves routine solution

Parameters are controlled

All students complete similar designs or solutions

NO