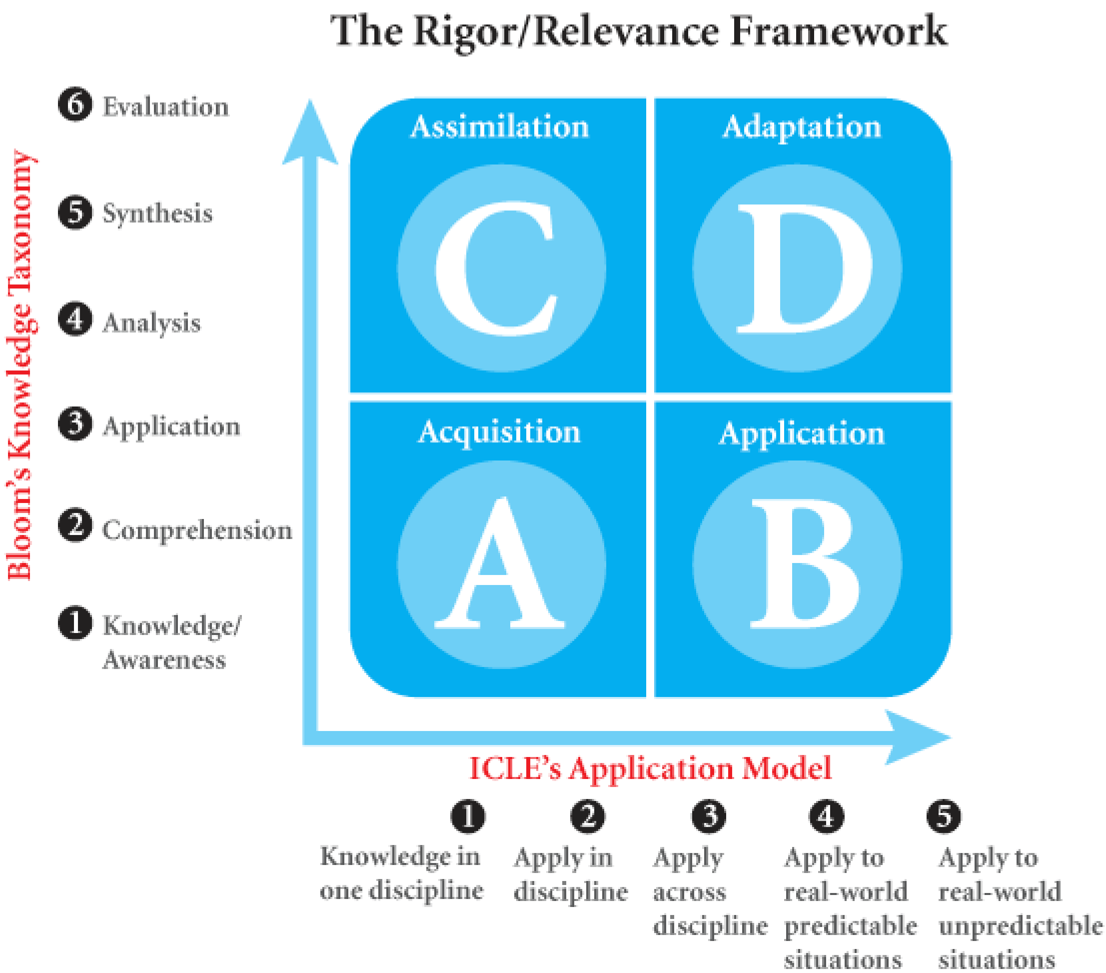
The Rigor/Relevance Framework: Where Kagan Structures Fit In

Are Kagan Structures compatible with the Rigor/Relevance Framework? If so, where do Kagan Structures fit in? Schools adopting the Rigor/Relevance Framework have asked these questions. Some readers may be completely unfamiliar with this framework. First, let's briefly overview the framework, then explore ways teachers can use different Kagan Structures to make their instruction more rigorous and relevant for students.



Adapted from: International Centre for Leadership Education

Part 1: The Rigor/Relevance Framework

The framework was developed by the staff of the International Centre for Leadership Education (ICLE)[1],[2]. They offer a helpful overview of the framework on their Web site (**www.leadered.com/rrr.html**), so we'll keep this overview brief. Conceptually, the model is very simple. It places two continuums on a chart. Most educators are intimately familiar with the first continuum. However, we know it as a taxonomy—Bloom's Taxonomy. The second continuum is the Application Model, the ICLE's own model.

Bloom's Taxonomy: The Rigor Continuum

Bloom's taxonomy is a knowledge continuum consisting of 6 "categories" of knowledge:

1. Knowledge
2. Comprehension
3. Application

4. Analysis
5. Synthesis
6. Evaluation

Bloom's Taxonomy can be thought of as a thinking continuum, increasing in complexity as we move up the continuum. On the "lower-level thinking" end of the continuum is knowledge. Knowledge consists of those discrete facts that students learn. For example, the Civil War was between 1861–1865. On the opposite end of the thinking continuum is "higher-level thinking." Evaluation for example is considered more complex because it often requires knowledge to make an informed evaluation. To evaluate if capitalism is a better economic system than communism, you'd have to know quite a bit about each.

As we move up the continuum, thinking is more complex or "rigorous," as ICLE terms it. That's where the "Rigor" side of the Rigor/Relevance Framework gets its name. Now let's see where the "Relevance" side comes from.

The Application Model: The Relevance Continuum

The second continuum is the Application model created by ICLE's Dr. William Dagget. It describes how we "apply" what we know. Like Bloom's Taxonomy, it has levels:

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

On the low end of the continuum, we have the acquisition of knowledge. On the opposite end, we have knowledge being used in the real-world which is often highly unpredictable. For example, what do you do when you see brinkmanship politics over the debt ceiling and know a stock market crash may be looming?

The term "relevance" comes from the idea that learning is more relevant to the extent you can apply your knowledge to solve real-world problems and create real-world products.

The Four Quadrants

The Framework has four quadrants.

• Quadrant A—Acquisition
Students learn new information and are expected to be able to recall learning.
– *Thinking:* Knowledge, comprehension
– *Application:* Knowledge and application within a single discipline
– *Examples:* 6 x 6 = 36; John Steinbeck wrote *The Grapes of Wrath*

• Quadrant B—Application
Students learn new information and are expected to be able to apply their learning in real-world situations.
– *Thinking:* Knowledge, comprehension
– *Application:* Apply across disciplines, apply to predictable and/or unpredictable situations
– *Examples:* How to make change from a purchase; Edit a paper using appropriate grammar

• Quadrant C—Assimilation
Students extend their knowledge to higher-levels, and may apply within the context of the classroom, but not in the real world.
– *Thinking:* Analysis, Synthesis, Evaluation
– *Application:* Knowledge and application within a single discipline

– *Examples:* Evaluation of political systems; conducting predetermined science experiments

• **Quadrant D—Adaptation**
Students apply their higher-level thinking skills to real world situations.
– *Thinking:* Analysis, Synthesis, Evaluation
– *Application:* Apply across disciplines, apply to predictable and/or unpredictable situations
– *Examples:* Solving climate change; designing a software application

Adding Rigor and Relevance

The framework is designed as a tool for educators to move toward greater rigor in the thinking dimension and greater relevance in the application dimension. The goal: we can achieve higher academic standards and help prepare students for the real-world by adopting instruction, curriculum, and assessment that acknowledges the value of rigor and relevance.

Part 2: Where Kagan Structures Fit In

Now that we have a basic understanding of the model, we can return to our original questions: 1) Are Kagan Structures compatible with the Rigor/Relevance Framework? 2) If so, where do Kagan Structures fit in?

The short answers are: 1) Yes, Kagan Structures are compatible with this framework, and 2) Kagan Structures fit in every quadrant of the model.

The Thinking Continuum—Kagan's Thoughts on Thinking

In the article ***Rethinking Thinking***[3], Dr. Kagan illustrates how Bloom's Taxonomy doesn't align with our modern-day understanding of the thinking. The taxonomy was a great step forward in thinking about thinking and still has very practical implications for teachers. But it was conceived in 1956, in a time before PET scans, fMRIs, and really before the blossoming of the field of cognitive neuroscience. Bloom's Taxonomy just doesn't jive with what we know today about the brain.

Advancements in brain science have given us a more modern and accurate understanding of thinking. Rather than a hierarchy as Bloom proposed, thinking skills are more differentiated and independent than this early model proposes. But we don't have to throw out the baby with the bath water. That is, just because the taxonomy may not be scientifically accurate, that's not to say that thinking at all levels of Bloom's Taxonomy isn't important to develop. Indeed, to prepare our students with 21st century skills, thinking at all levels of the taxonomy is essential! But so too are other thinking skills largely ignored by the taxonomy. We can think of thinking skills like a pie. Bloom offered one way to cut the pie. There are other, more differentiated ways to cut the thinking skills pie. Below is a model aligned with an information processing approach to thinking skills, adapted from an earlier article[4]:

Structure for Thinking

Thinking Skills	Synonym & Related Skills	Sample Structures
Understanding		
1. Recalling	Drawing info into Working Memory, Memorising, Paraphrasing, Recollecting	Flashcard Game (Semantic Memory); Sage-N-Scribe (Procedural Memory); Simultations (Episodic Memory)

2. Summarising	Abstracting, Comprehending, Describing, Observing, Processing	Three-Step Interview; Timed Pair Share
3. Symbolising	Choreographing, Drawing, Illustrating, Translating, Verbalising, Visualising	Draw What I Write; Window Panning; Mind Mapping
4. Categorising	Associating, Classifying, Grouping, Patterning, Rearranging, Sequencing, Sorting	Find-A-Frame, Fill-A-Frame
5. Shifting Perspective	Empathising, Visual/Spatial Perspective Taking	Paraphrase Passport
Transforming		
6. Analysing	Decontextualising, Disembedding, Dissecting, Dividing, Separating	Pairs Compare; Same-Different
7. Applying	Adapting, Decontextualising, Transferring	Team-Pair-Solo
8. Inducing	Example to Idea, Inferring, Observing, Hypothesis Generation and Testing	Find My Rule
9. Deducting	Deducting, Drawing Conclusions, Idea to Example, Reasoning	Logic Line-Ups
10. Calculating	Estimating, Solving, Applying, Checking	Pairs Check; RallyCoach
Generating		
11. Brainstorming	Creating, Elaborating, Exaggerating, Inventing, Reversing	4S Brainstorming; Jot Thoughts
12. Synthesising	Associating, Blending, Building, Combining, Creating, Integrating	Team Statements
13. Predicting	Anticipating, Estimating, Extrapolating, Sequencing	Estimate Line-Ups
14. Evaluating	Assessing, Criticising, Decision Making, Determining Fallacies, Interpreting, Prioritising	Sum-the-Ranks; Agree-Disagree Line-Ups
15. Questioning	Hypothesising, Inquiring, Investigating	Q-Matrix, Spin-N-Think

Admittedly, no organisational system will be perfect. But what we like is that this system is both differentiated and functional. The information segment of the economy is the largest and fastest growing section. We need to prepare our students with the full range of information processing skills. Notice the Sample Structures column. For each type of thinking skills, there are Kagan Structures designed to access, engage, and develop that thinking skill. For example, to develop deductive thinking skills, the teacher may use the structure Logic Line-Ups. In a Civics class, the teacher may provide students clues about famous African Americans and students deduce the sequence of Martin Luther King, Jr., Malcolm X, President Obama, and Rosa Parks in a line up. In the same class, the teacher may use the structure Find My Rule to have students induce the difference between Malcolm X's militant approach to civil rights and Dr. King's nonviolent approach. Two structures develop very different thinking skills: Logic Line-Ups develops deductive thinking and Find My Rule develops inductive thinking.

Bloom’s Taxonomy and the Rigor/Relevance Framework do a great service to education in that they emphasise moving beyond knowledge and comprehension. Education too often focuses narrowly on the ability to regurgitate basic facts to the exclusion of independent thinking. The Kagan model agrees that "higher-level" thinking skills are indeed important for educators to develop. However, the model strives for a more robust view of thinking skills and encourages educators to develop the full range of thinking skills using a wide range of structures that produces the many different types of thinking.

This broader approach to thinking fits well with Rigor/Relevance Framework's "real-world" thrust. If our goal as educators is to prepare students for the real world which is constantly changing and largely unpredictable, then our mission should be to develop the full spectrum of thinking skills that students will need throughout their lives beyond the classroom. We can’t predict how the world will change, especially in the face of an explosion of information and technology. But we can predict with some accuracy that equipping students with a range of thinking skills is a forward-thinking education.

The Application Continuum: Kagan's Embedded Curriculum and Project Structures

Focusing now on the application side of the framework, where does Kagan fit in? The basic proposition of the Application Model is that there is a continuum of how knowledge can be applied. On one side of the continuum, students memorise basic information, facts, and formulas to be able to use their knowledge to score well on the test. But is that the real reason we have students go to school? To score well on tests? Our goal is to prepare students for the real world, not just for the world of tests.

The far side of the application continuum recommends that students be able to apply their learning to the real world. That their knowledge in maths is not confined to circling the correct answer on the test, rather students should be able to actually use their maths skills how adults would use them in the real world. Application of maths skills in the real world include predictable procedures such as balancing a cheque book. And for even greater relevance, according to the model, students should be able to use their maths skills for unpredictable applications in the real world such as analysing if a marketing promotion was profitable given many unknowns.

The more relevance we can create in the classroom (or even outside the classroom), the more worthwhile the education. If we follow this line of thinking to its logical extreme, curriculum specialists need to radically re-think what we are teaching our kids. Non-academic curriculum might actually trump academic curriculum. Instead of history and obscure algorithms, curriculum would be more relevant if we taught more practical and pervasive subjects that all students would benefit from such as thinking skills, social skills, communication skills, and teamwork skills. Highest on the list of employability skills are communication skills, interpersonal skills, and teamwork skills.[5] Many obscure history facts and complex maths algorithms have little relevance in everyday life, but the ability to work successfully with others is a life skill that few can do without. Daniel Goleman's book *Emotional Intelligence*[6] makes a brilliant case for why EQ (Emotional Intelligence) may be more important than IQ. Interpersonal relationships are an integral part of emotional intelligence, and those who develop their personal and social skills in schools are better prepared for success in the real world.

The Embedded Curriculum. To our knowledge, the Application Model doesn't explicitly call for teaching social-emotional skills, emotional intelligence, and life skills curriculum as they are variously called. But its basic underlying tenet—the call for curriculum to be more relevant—suggests non-academic skills should also be an educational priority. From the teacher's perspective, this creates a tug and pull. Do we teach academic curriculum, some of which could qualify as irrelevant, yet is still required by standards and expectations? Or do we teach those ever-important life skills and thinking skills?

Kagan's answer is both! With barely enough time to cover the existing academic curriculum, how do we pile on a social skills curriculum and then add to that a thinking skills curriculum? Kagan's solution is to teach them all simultaneously using structures that simultaneously teach academic curriculum, higher-level thinking, and communication—all through highly interactive cooperative instructional strategies.

Our earlier Civics class example described how a teacher developed two very different thinking skills while focusing on the academic content. Let’s examine **Numbered Heads Together**, one of over 200+ Kagan Structures to see the power of the embedded curriculum in Kagan Structures. After teaching a maths lesson on percentages, the teacher displays on the screen a word problem using percentages. Students are seated in teams. First, they individually solve the problem. Then, they put their heads together with teammates to reach consensus on the answer. When ready, the teacher calls on a student to share the team's answer. The structure is a simple alternative to independent practice. Upon analysis, we see how re-structuring instruction has a dramatic impact on the learning experience.

Let's analyse what's going on here to see the power of Kagan Structures. First, the curriculum is made more relevant. Instead of a maths problem that looks like: $45 x 30% = ?, the teacher converts the problem into a real-world scenario that captures students' interest: "The video game store is having a 30% sale on your favourite game that usually sells for $45. How much will it cost you?" Making a maths problem more real-world is not unique to Kagan Structures. But look what happens next. Instead of students individually solving the problems on a worksheet, students solve the problem then put their heads together with teammates to reach consensus on the answer. They show their teammates their answers. They check for consensus. If someone has an incorrect answer, they disagree politely. They negotiate understanding. They explain the problem. They tutor each other. The teacher randomly selects one teammate to share the team's answer to hold everyone accountable for participating. When correct, the team celebrates their selected teammate with a high-five. Notice too, students' re-orientation from independent learners to being members of a team, on the same side, helping each other, and hoping for the success of teammates. The curriculum is no different than in the classroom next door; it's multiplying percents. But the cooperative and interactive instructional strategies makes the process so much richer. In addition to learning a maths skill, students practice their social skills, thinking skills, communication skills, and teamwork skills (sharing, comparing, negotiating meaning, tutoring, appreciating). By choosing Kagan instructional strategies we make education a richer preparation for essential life skills. Is it surprising to learn that cooperative learning instructional strategies are superior to traditional alternatives for teaching academic content as well as social skills?

A critic may concede that the Kagan model is an elegant solution for simultaneously delivering an academic, social, and cognitive curriculum. Further, the critic may concur that this broader curriculum—one that includes a social, and cognitive dimension in addition to the academic dimension—is more "relevant" than a strictly academic curriculum. However, the critic might point out that our example is of a predictable learning application. How is that preparing students for the highest degree of application in the Application Model—real-world application to unpredictable situations?

Social interaction carries a degree of unpredictability. With social interaction, you never know in advance the direction it will take. That's part of the reason students love to work in teams. There is a novelty factor when interacting with others. But the point is well taken—much of education, including our example, doesn't prepare students for unpredictable outcomes. Education often focuses narrowly on pre-defined objectives where the parameters are controlled and all students are working toward the same solution. We make a distinction between high-consensus and low-consensus learning. High-consensus learning is when given a problem or challenge, most people will come up with the same answer or solution. Low-consenus, in contrast, is where people may come up with solutions that are very different.

The variety of structures in the Kagan Model equip teachers with a wide range of cooperative structures for a wide spectrum of teaching objectives. There are great structures, like **Numbered Heads Together, Sage–N–Scribe,** and **RallyCoach** for teaching high-consensus, need-to-know facts and skills. But Kagan also offers structures for teaching divergent and creative thinking such as **Timed–Pair–Share, Team Statements,** and **Agreement Circles.** With these structures, our goal is to develop critical and creative thought, the exact processes used in the real-world in unpredictable scenarios.

With the Kagan model we have a number of options to enhance students' ability to apply their knowledge to unpredictable outcomes. But how do we make learning more real-world? What do we do if we want to move right on the Application Model and move away from pre-defined competencies? Instead of transmitting knowledge, how do we get students to apply their learning in creative ways to solve real-world problems? How do we create low-consensus content? That's where team projects and presentations come in!

Project Structures.

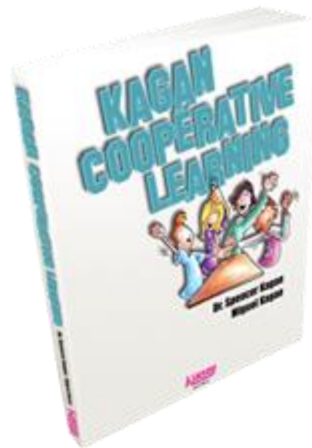
Cooperative projects and presentations are Kagan's answer to open-ended, creative endeavours that not only require students to integrate skills across disciplines, but also to pool strengths and knowledge across teammates—just as we do in the real world.

Team Projects, one of the most utilitarian of the project structures, starts with a challenge. To integrate academic learning in astronomy, the team's challenge may be to build a model of the solar system. To apply social studies learning, the team's challenge may be to write and perform a play about the gold rush. To apply language arts knowledge, the team's challenge may be to write a creative story. The more real-world the challenge, the more practice we provide our students in applying their knowledge to scenarios they'll likely encounter beyond the classroom.

Professions are a wonderful source for project ideas because there is nothing more real-world than the real projects professionals do. For example, a graphic designer creates a brochure. Creating the brochure requires the application of skills in maths, language arts, visual arts, technology. Students can create a brochure on a state they are studying. Take another profession: Advertising. An advertising team may produce a commercial to sell a product. Teams in the classroom can make a commercial to sell their position on a social issue. A final example: Computer programmers write programs. Students can design a computer program to teach a maths skill. Each of these projects is very real world, integrates skills across subject matters, and leverages teamwork.

But the project itself is just part of the story. The other parts include presenting the project to classmates and learning about their projects as well. Oftentimes, students acquire as much knowledge through the projects of others as they do their own. This information sharing process is also closely aligned to real-world practices. For examples, political candidates must share their platforms, scientists share their discoveries to colleagues, computer developers share their latest technology at developer conferences.

In our book, ***Kagan Cooperative Learning***[7], we have a chapter dedicated to cooperative projects and presentations. There, we outline the Kagan approach to cooperative projects. Some of the best Kagan Project and Presentation Structures include:



- **Team Projects**—For basic team projects.
- **Teams Post**—For sharing team solutions.
- **Team Whip**—For sharing team ideas.
- **Team Stand-N-Share**—For sharing teams' brainstorming results.
- **One Stray**—For collecting ideas from other teams.
- **Three Stray**—To learn about other team's products and projects.
- **Number Group Presentation**—For sharing projects with other teams, and collecting feedback.
- **Carousel Feedback**—For viewing and commenting on other projects.
- **Team Presentation**—For presenting to the class.
- **Team-2-Team**—For presenting to another team.

Early forms of cooperative learning were frequently project-based. Co-op Co-op[8], Group Investigation, Partners, and Co-op Jigsaw were cooperative learning staples. Interestingly, with the emphasis on test scores and content mastery many of these powerful forms of investigations fell from favour. With a resurgence of interest in project learning and real-world applications, these designs are all great structures for constructing meaning, working in teams, and applying and presenting knowledge in highly creative ways.

Increasing Rigor, Increasing Relevance

Kagan Structures is not a single instructional strategy. Kagan Structures have evolved into a wide range of teaching methods that engage students. There are more than 200+ Structures for teaching. There are so many structures because educators have so many teaching objectives. There are simple structures to promote basic content mastery. There are structures used to develop very specific thinking skills. There are structures for brainstorming, structures for making decisions, structures for sharing information. No single instructional strategy can do it all! That's why we have developed so many structures that respect research-based principles for cooperation and learning. So if the question is: Is there a structure for making learning more rigorous and more relevant? The answer is: Yes! There's a structure for that… actually, quite a few.

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