Kagan Structures: Research and Rationale

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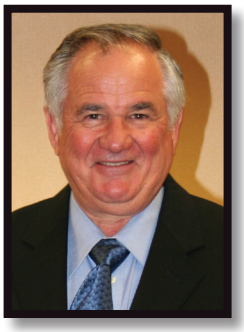


Teachers who try the Kagan Structures find them easy to learn, easy to use. They report positive outcomes for students including increased achievement, improved social skills and relations, and improved classroom climate. Many teachers report they are rejuvenated by the responses they get from students when they begin using the structures. Teachers near the end of successful careers report that the structures have made more difference in their teaching than any of the many educational innovations which they have implemented. Students say they are fun and they help them learn. Administrators report a variety of positive outcomes for their schools and districts. Some schools and districts have done formal research studies and provide very impressive data documenting gains resulting from the adoption of structures. We have posted the research studies, student comments, and teacher comments on our web page. To view them, go to http://www.kaganonline.com/Newsletter/Archive/2001/0401/SpencerNote.html.

While testimonials from teachers, students, and administrators are important, especially when they are backed up with hard data, there are more important reasons supporting the adoption of Kagan Structures. In the long run an educational innovation must pass tougher tests than boosting teacher enthusiasm and boosting student test scores. If the innovation boosts achievement as narrowly defined by academic tests, but does little to foster understanding or to develop the whole student, in the long run it too will fade. To endure, an educational innovation must align with what

Article At-A-Glance

we hold to be most valuable as educators: fostering the wide range of skills and virtues which will allow students to function successfully and function with dignity across the range of (often unpredictable) situations in their life. If the innovation produces achievement, but fails to prepare students for the future, fails to produce thinking skills, social skills and social character, it too will pass. Our mission is to prepare students with the cognitive skills and relationship skills that will allow them to function well in the rapidly changing interdependent world of tomorrow. As educators for a 21st century democracy, we must demand much of ourselves and our methods. In deciding on the worth of any educational innovation, we must look beyond initial excitement and narrow achievement we must ask if the innovation aligns with fundamental principles of learning, and if it is likely to make an enduring difference for teachers and students along the various dimensions we most value, including thinking skills, social relations and character virtues. We must ask, "Does the innovation help us become who we most want to be?

There is yet another determinant of whether an educational innovation will stand the test of time. It is something I have written about in a previous issue of this news magazine: The Replacement Cycle. Education is plagued by innovations that pop onto the scene, make a big stir, and then pass, replaced by "next year's new thing." To stand the test of time, an educational innovation must avoid the trap of the replacement cycle. If the innovation is to become just one more victim of the replacement cycle, it does not merit adoption. After all, it does not make sense to invest time, resources and energy in an innovation that will be here today but gone tomorrow.

Thus the research and rational supporting Kagan structures must address four questions beyond the testimonials and the achievement data we have posted:

1) Do the structures align well with how students best learn?
2) Do the structures align well with the cognitive and social outcomes which will best prepare our students for the future?
3) Does empirical work reveal positive outcomes?
4) Will the structures pass the test of time?

Although a full answer to these questions would extend far beyond this article, we can review here enough data and theory to arrive at a definitive answer to each.

Principles of Learning

Do the Structures Align with How Students Best Learn?

A good educational innovation must align with the way students best learn. To date, there is no complete educational theory of learning. Instead we have many mini-theories, each telling an important but incomplete part of the story. Our understanding of student learning is rather like the understanding the six blind men had of the elephant, each touching a piece of the animal, each concluding it was a different beast. Given the present state of our understanding of learning it is best we listen to all of the views least we oversimplify. Thus, in this section I provide a thumbnail sketch of a variety of approaches to learning and ask how the structures align with each.

Cooperative Learning Theory

Cooperative learning theory posits that students learn best when they can encourage and tutor each other, when they are held individually accountable, when they all participate about equally, and when there is a great deal of active, interactive engagement.

The Kagan Structures align extremely well with these principles because most the Kagan Structures were created based

on a rigorous application of cooperative learning theory. Whereas other methods of cooperative learning are satisfied with "face to face interaction," the Kagan Structures were designed to meet the more demanding criteria of equal participation and maximizing simultaneous interaction. The Kagan Structures are also quite in contrast to group work in which students are allowed to interact in an unstructured way. Group work usually produces very unequal participation and often does not include individual accountability, a dimension proven to be essential for producing consistent achievement gains for all students. The Kagan Structures were designed to meet the highest standards of cooperative learning.

Pairs Check, Singapore

Multiple Intelligences Theory

According to the theory of multiple intelligences as set forth by Howard Gardner (1983, 1993), each student has his or her own unique pattern of intelligences. These intelligences all can be developed, and students learn best when at least part of the time they have access to the curriculum through their preferred intelligence or intelligences. In the book, Multiple Intelligences, The Complete MI Book, Miguel Kagan and I (1998) identify three visions which spring from MI theory:

- **Matching**
- **Stretching**
- **Celebrating**

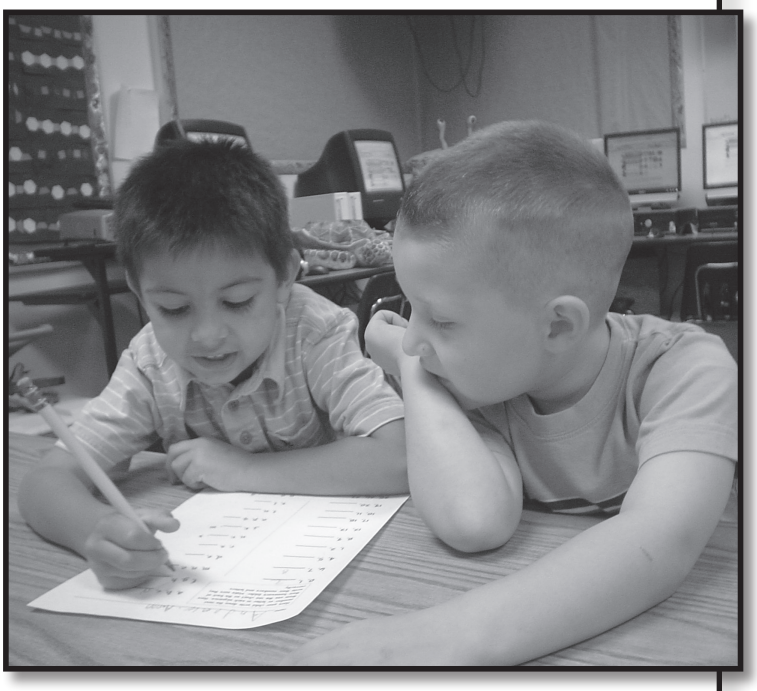
Associated with these three visions are three different types of learning:

1) Learning the academic content (which is promoted by matching the way we teach with the way students are smart),
2) Learning to develop or stretch the intelligences (which is promoted by engaging all intelligences); and
3) Learning about oneself and others (which is promoted by providing opportunities for students to view, reflect on, and celebrate their own unique pattern of intelligences and that of others).

Any particular structure engages specific intelligences. For example, Kinesthetic Symbols engages the bodily/kinesthetic intelligence. When we use that structure we match students who are strong in the bodily/kinesthetic intelligence; they enjoy and retain the content more. We stretch or develop the bodily/kinesthetic intelligence among all students because each time we engage an intelligence we develop that intelligence. Each time we use a structure we do even more for students; we help students better understand their own unique pattern of intelligence and the diversity among them. For example, as students use Kinesthetic Symbols they view that intelligence in action. In the process they better understand their own strengths and weaknesses as well as those of others. Johnny, who is not outstanding with words or numbers shines with Kinesthetic Symbols and because the teacher uses that structure Johnny has new self-respect and success and others appreciate him. They came also to appreciate more the diversity among them. Thus the structures realize the highest visions of multiple intelligences theory and promote all three types of learning called for in that theory.

Brain-Compatible Learning

In the last issue of the Kagan Online Magazine, I reviewed nine ways in which the Kagan structures are consistent with the learning principles derived from brain science (Kagan 2001). Perhaps the most convincing of all are the active brain imaging studies which demonstrate more brain activity in more places in the brain when students are interacting. Theorists attempting to derive classroom practices from brain science converge on the importance of creating a psychologically safe environment. The teambuilding, classbuilding, and communication building structures (as well as Silly Sports & Goofy Games) all contribute to creating a caring, connected, safe social environment—an environment in which students are safe to learn.



RallyCoach, Las Vegas, NV

Essential Elements of Effective Instruction

To be effective, a lesson must teach to an objective and have objectives at the correct level of difficulty. The teacher must continually monitor and adjust while teaching a lesson, understanding and employing a range of principles of learning. Students do not learn well if they are not set; they need to relate the content to their own personal experience and be actively engaged and motivated by an activity congruent to the objective. Students do not acquire new concepts well without guided practice which is rich in feedback and validation. The lesson needs to be structured also to allow transference. Students understand and retain the content far better if the lesson has closure: students need to articulate the meaning of the lesson. These and many other principles of learning, elegantly articulated by Madelyn Hunter (1982), are powerful guiding principles for all teachers. The Kagan structures are powerful tools in implementing the essential elements of effective instruction, especially in allowing authentic assessment, and creating active engagement. Some structures are wonderful for creating a set (Timed Pair Share, RallyRobin), others for guided practice (Pairs Check, RallyCoach, Sage-N-Scribe) and yet others generate great closure activities (Team Statement, Team Mind Mapping, Carousel Present).

Expectation Theory

Students live up to (or down to) expectations. Theory and research support that conclusion (Rosenthal, 1987; Rosenthal Baratz, & Hall, 1974; Rosenthal & Rubin, 1978). More importantly, remarkable, even incredible gains are posted for classes and whole schools when teachers and staff hold very high expectations (Mathews, 1988; Monroe, 1997). Teacher and peer expectations rise when cooperative learning and multiple intelligences structures are used on a regular basis. Students who cannot perform well on, for instance, a verbal/linguistic task, do remarkably well when a different intelligence is engaged, such as the bodily/kinesthetic intelligence. In explaining the remarkable gains of students in schools

in which a multiple intelligences philosophy is adopted, Campbell and Campbell (1999) rely far more on one explanation than any other: raised expectations. When a range of structures are used, we get to see students at their best, raising our expectations for them, which in turn raises their own expectations and performance.

Learned Optimism Theory

If a student tries to succeed at an academic task and repeatedly fails, the student is at risk of falling into helplessness. The student may conclude, "What I do does not make a difference, so there is no sense in trying." Optimism, the opposite of helplessness can be learned (Seligman, 1991). Once learned, optimism predicts not only academic success but success across many life endeavors. Because the structures scaffold for success and, in fact, produce a greater rate of success, they dramatically decrease the probability of helplessness among students. Students see that what they do makes a difference, becoming more optimistic and resilient. This ongoing experience of learned optimism generalizes. As a result, students are far more likely to persist in the face of failure and become more successful academically and in their relations with others.

Flow Theory

When there is a good match between task difficulty and student ability, students enter a state of flow (Csikszentmihalyi, 1990). The flow state is optimal for productivity and learning. Because the structures allow more opportunities for teachers to do representative, authentic assessment, task difficulty can be more carefully fine tuned, increasing the amount of time students will remain in the flow state.

Vygotsky's Theory

Vygotsky (1978) emphasizes the importance of teaching in the zone of proximal development. The zone of proximal development is the difference between what one can do alone and what one can do with mediation. To teach below that zone is foolish as the student can already perform at that level of difficulty. To teach above that zone is also foolish because the student cannot master that level of difficulty, even with help. Some Kagan Structures are designed to regulate task difficulty to keep students in the zone of proximal development. For example, in Team Pair Solo students tackle difficult problems first with plenty of team support and help. Only as they are ready do they take on the problems as pairs, and finally they work independently. This mediated learning allows students to progress smoothly through the zone of proximal development so they learn to do alone that which previously they could do only with help.

Behavior Theory

Behavior theory has fallen on hard times among many educators today who are intensely aware of the importance of students constructing knowledge. Modern educators know many important student learnings are not acquired in the same way a dog learns to salivate when meat powder is paired with the sound of a bell. Certain principles springing from behavior theory, however, remain firmly established (Skinner, 1968, 1953). We learn better in the presence of feedback than in its absence. When certain behaviors are followed by reinforcement, the probability of learning those behaviors is increased. When the reinforcement is immediate, the probability is far greater than when it is delayed. When acquiring a new behavior, frequent feedback is more powerful than infrequent feedback. When students work alone on a worksheet and turn it in for a grade, they receive their

feedback after the teacher has had time to grade the worksheet. In contrast, when they work in pairs using structures like Sage-N-Scribe, Pairs Check, and RallyCoach, they receive immediate reinforcement. Immediate reinforcement is dramatically more effective than delayed reinforcement. Reinforcement in the Kagan Structures is not only more frequent and more immediate, there is more of it. Students receive feedback and reinforcement following each problem, leading to a greater amount of reinforcement. Students also have more correction opportunities, and the correction opportunities are immediate, not delayed. Thus unlike what happens when students work alone on worksheets, students working in Kagan Structures, cannot repeatedly practice incorrectly. Further, for many students, the peer reinforcement is more powerful than a grade from a teacher.

Transference Theory

When the situation of acquisition is too dissimilar to the situation of performance, transference cannot occur. The classic example of violation of transference theory is the formal approach to language acquisition. Students memorize lists of vocabulary words and verb conjugations, but cannot transfer that knowledge to the speaking situation so they never obtain language fluency. Why not? Because the situation of acquisition (memorizing lists) is very dissimilar to the situation of performance (having a conversation). Similarly, students can memorize the steps of syllogistic reasoning, but do not necessarily become more logical in their decision making—the memorization and practice of formal abstract logic problems is quite dissimilar to the use of logic in the context of complex everyday decision making. Examples of the inability of students to apply academic learnings can be multiplied: The memorization of the steps of conflict resolution does not lead to better conflict-resolution skills. Learning about the importance of certain communication skills does not lead to the acquisition of communication skills unless the skills are practiced in realistic interaction situations. The Kagan Structures represent a natural context in which to practice interactive communication skills, character virtues, thinking skills, conflict-resolution skills, decision-making skills, leadership skills, and a host of other social skills. Because the Kagan Structures are real-life interaction situations similar to those in which the skills will be applied, they sidestep the transference gap so the students do not just learn about the skills, they acquire the skills and can use them for a lifetime.

Spend-A-Buck, Las Vegas, NV

Desired Outcomes

Do the Structures Align with Desired Outcomes?

It is not enough to say that the structures align well with how students best learn. We must ask if the structures are likely to produce the outcomes we most desire. Will they prepare our students well for 21st century life?

Although we cannot predict the future with certainty, we can be fairly sure that students who acquire thinking skills, social skills, and character virtues will be better prepared to

work and live well in the rapidly changing, interdependent world of the future. In the rapidly changing workplaces of the future, the content that students work with, the information and skills they work with, will change many times over. We cannot give students today all the information and skills they will need tomorrow. The constant is not the content. What we can give them which will be of use for a lifetime are thinking and relationship skills. We don't know what information they will work with, but we do know they will need to analyze, synthesize, categorize, chunk, and in myriad other ways manipulate, transform, and work with an ever increasing amount of information. We do not know which work teams they will be part of in their various jobs, but we do know that whatever their position in the workplace they are very likely to be working with others and working in teams. In the complex, interdependent workplace of the future, teamwork and relationship skills will be at a premium. Over 70% of all students enter a first job which includes work on a team and that percent climbs each year.

Cooperative learning promotes higher-level thinking

Thinking Skills

In a number of ways, the use of structures stretches thinking skills. The various ways in which cooperative learning promotes higher-level thinking have been explored and documented (Davidson & Worsham, 1992). Each of us carries with us a set of data on any topic and a way of organizing that data. When we interact with others we are stimulated toward higher-level thinking because others provide new information as well as new ways to organize that information. Out of the interaction of different points of view, different conceptual frameworks, and different information bases, comes a higher-level synthesis. Cooperative learning promotes higher-level thinking also because it promotes questioning, student input into what is studied and and how it will be studied, student projects, and student construction of meaning. Specific structures promote specific types of thinking. For example, Logic Line-Ups promote deductive reasoning, Find My Rule promotes inductive reasoning, 4S Brainstorming promotes generative thought; Paraphrase Passports promotes role-taking skills; Agree-Disagree Line-Ups promote evaluative thinking; Pairs Compare promotes compare-contrast thinking, and Team Statements promote synthesis level thought. These are but a sample of the many structures designed to foster specific and different types of thinking skills. The structures promote thinking skills in yet another way: Because there are structures for each of the intelligences, when a range of structures are used, students engage the range of intelligences and thus develop the habit of approaching any content from multiple perspectives, literally using different parts of the brain.

Social Skills and Relations

As we enter deeper into the 21st century, it becomes increasingly clear that if our students are to be successful in the workplace of the future we must educate for social skills and ability to work with diversity. Three factors converge to create greater interdependence in the workplace: complexity, shifting demographics, and the global community. No one person can build a modern computer; it takes teams working on components, coordinating efforts with other teams. Thus teamwork skills and communication skills become survival skills for the workplace of the future. Further, because of our increased ability to communicate and trade at a distance and our changing demographics, increasingly we must learn to work well with others different from ourselves—diversity skills are at a premium. One of the most powerful proven

results of cooperative learning methods is that they result in improved social skills and social relations among students. (Slavin, et. al, 1985) Cooperative learning is preparation for the workplace of the future. Use of multiple intelligences structures represents another form of preparation for the workplace of the future because it prepares students with diversity skills, the ability to work with others who have other ways of learning and communicating. Because diversity will be the hallmark of the workplace of the future, we will do well to place a premium on teaching methods which foster diversity skills.

Caring Community

One of the most obvious differences between classrooms in which students regularly engage in cooperative learning and those in which they do not is the sense of community among students. Because cooperative learning involves helping, praising, encouraging, celebrating, and listening, students become more caring and supportive toward each other. A caring community emerges. At a time when the words "Columbine" and "Santee" have become symbols for alienation and polarization among students, cooperative structures that produce a caring community among students literally save lives.

Status Equalization

In the traditional classroom, some students receive most of the teacher and peer positive attention and deference, while other students receive almost none. With many of the Kagan Structures, each student in turn is a team leader so status is greatly equalized. Status equalization improves race relations and social relations among students.

Status issues occur at another level: there are high and low status groups. In traditional classrooms, there are in-groups and out-groups. Students self-segregate themselves into groups variously called the geeks or nerds, surfers or skaters, rockers, jocks, and socialites. Students ostracize the out-groups, leading to alienation, drop-out, drug abuse, and too often leading to disastrous consequences when vengeance is vented. Teambuilding, classbuilding, and rotating leadership roles break down these segregations so over time students no longer see themselves as "Us" vs. "Them", but rather as "We." They see themselves as equal status members in a community of learners.

Educating for Character

Although educators in our recent past (unlike earlier educators) have been resistant to teaching values, there is a growing realization that education can never be values neutral and that educating for character virtures is essential in a democratic society. When a student lies about why his homework is not completed, how the teacher responds will either foster the virtue of honesty or foster in the student the desire to become better at lying. By who we are, how we interact with students, and how we have students interact with each other we either foster positive character or undermine character development. Thomas Lickona (1991) in his classic book, Educating for Character. How our schools can teach respect and responsibility, makes the indisputable case for the need to educate for character.

In a previous issue of this Online Magazine, I summarized how Kagan Structures educate for character on an ongoing basis (Kagan, Winter 2000). Students acquire virtues as they use the structures. For example, as students engage in Circle the Sage or Jigsaw, they practice leadership skills. The list of character virtues developed via the structures is long, including:

- **Paraphrase Passport:** Caring, Impulse Control, Respect, Understanding;
- **Pass-N-Praise:** Kindness
- **Folded Agree-Disagree Line Ups:** Courage, Respect, Understanding

- **Estimate and Prediction Line Ups:** Good Judgment
- **Talking Chips:** Impulse Control
- **Team Pair Solo:** Cooperation, Helpfulness, Leadership, Self-Motivation, Pride in One's Work
- **Gambit Chips:** Courtesy
- **Three Step Interview:** Understanding, Responsibility
- **Team Statements:** Citizenship, Cooperation, Integrity, Respect
- **Spend-A-Buck:** Fairness

The powerful thing about a structural approach to character development is that the virtues are acquired while students are engaged in traditional academic curriculum. The virtues amount to an embedded curriculum, acquired by the way we teach, not via separate lessons. Lessons on virtues are soon forgotten, but virtues acquired in the process of daily interaction become part of who we are.

Emotional Intelligence

Most educators working the field of emotional intelligence have settle on the five dimensions definition of Emotional Intelligence offered by Daniel Goleman (1995): Enhancing emotional intelligence consists of developing self-knowledge, self-control, self-motivation, empathy, and relationship skills. Daniel Goleman has demonstrated that EQ (emotional intelligence) can be more important than traditional IQ in determining success on the job, in school, in interpersonal relations. The infamous case of Jason H. makes the point vividly: When this better than straight A student received less than an A score on a test, he took a knife to school and repeatedly stabbed his teacher. Goleman asks the question: How can someone so smart be so dumb? The answer in part is that there are smarts not measured by academic tests or traditional IQ tests. Being smart includes emotional intelligence.

One of the most powerful aspects of structures is that they develop emotional intelligence.

One of the most powerful aspects of structures is that they develop emotional intelligence. As students do a Timed Pair Share they develop their self-knowledge; as they use Talking Chips they work on impulse control; as students play Showdown or any of the structures high in individual accountability they develop self-motivation; as they play Paraphrase Passport they develop empathy; as they engage in the range of structures they hone their relationship skills. The wonderful thing about the structural approach to EQ is that the skills of EQ are developed without separate lessons on EQ. Through the structures EQ is developed while students are engaged in traditional academic curriculum.

Empirical Support

Clearly there is a wealth of theory supporting the use of structures. Does the empirical research support the expectations springing from theory? In evaluating the empirical support for the Kagan Structures, we will limit our review to studies of cooperative learning and multiple intelligences because most of the Kagan Structures involve cooperative learning and those that do not are designed to engage one or more of the multiple intelligences. Because all of the Kagan Structures implement the theories of cooperative learning and multiple intelligences, research supporting the positive outcomes of cooperative learning and multiple intelligences supports the use of Kagan Structures. It turns out there is a wealth of research indicating that a wide range of gains result from cooperative learning and from engaging the range of intelligences.

Cooperative Learning

Cooperative learning is one of the most extensively researched educational innovations of all time. There are approximately one thousand research studies which document its effectiveness on quite a range of outcome variables. More detailed descriptions of studies and more extensive lists of references are found in the most comprehensive research volume, Learning to Cooperate, Cooperating to Learn (Slavin, et.al, 1985) and the work of Ted Panitz who presents his summary on the web, at (http://home.capecod.net/~tpanitz/tedsarticles/coopbenefits.htm).

Among the most strongly supported findings

Cooperative learning improves:

- ★ Academic achievement among students, especially for low achieving students.
- ★ Race relations among students, including frequency of cross-race friendship choices.
- ★ Social skills and relations, including empathy, diversity skills, leadership skills, caring, sharing, helping, and feeling cared about.
- ★ Self-esteem among students, including intellectual/academic self-esteem, and peer self-esteem.
- ★ Class climate, including liking for class, content, and teachers.
- ★ Higher-level thinking, including questioning and synthesizing diverse viewpoints and data. Those who would like a brief referenced overview of the most important outcomes of cooperative learning will find it in Chapter 3 of my book, Cooperative Learning (1994).

It is impossible to single out just one explanation for why cooperative learning works so well on so many dimensions. Cooperative learning is a teacher's dream but a researcher's nightmare. When students interact in a positive way on a consistent basis, many variables are effected. It is probable that the positive benefits of cooperative learning flow from all of the following variables:

- **peer tutoring**
- **peer encouragement**
- **peer praise and rewards**
- **enhanced time on task**
- **more frequent correction opportunities**
- **more immediate feedback**
- **more practice**
- **more meaningful context to construct meaning**
- **greater individual accountability**
- **increased choice**
- **enhanced motivation**
- **greater engagement**
- **increased verbalization**
- **interaction of different points of view**
- **shift in teacher attitudes and behaviors**

In their recent book, Classroom Instruction that Works, Robert Marzano, Debra Pickering, and Jane Pollock (2001) advocate cooperative learning as one of the most proven approaches to increasing achievement. They note that cooperative learning has an effect size of .78 compared to methods in which students work as individuals. This effect size places cooperative learning among the strongest of all methods for increasing academic achievement.

The empirical work summarized by Marzano and his coauthors, however, indicates that merely placing students in groups and having them interact will not necessarily produce gains. They offer a warning: cooperative learning "is misused when the tasks are not well structured."

If the principles of cooperative learning are ignored, placing students in groups may not lead to positive results or even lead to negative outcomes. For example, homogenous ability groups actually lead to decreased achievement among the low achieving students (effect size = -.60).

Marzano and his coauthors state, "To maximize students' experience, it is probably a good idea to use a variety of criteria, as well as adhere to

the tenets of cooperative learning, to make the experience successful. Kagan (1994) suggests a variety of group structures."

When cooperative learning is structured well to include the basic principles, the positive outcomes are many and dramatic. The Kagan Structures are designed to do exactly what Marzano and his coauthors call for—to adhere to the priniciples of cooperative learning through the use of well-structured tasks.

of the schools had base achievement rate data allowing before-after implementation comparisons. Other schools used MI since their inception, so comparisons are made with non-MI schools, or with district, county, state, or national norms.

A brief summary of the achievement results is as follows:

Multiple Intelligences

Whereas the empirical research on cooperative learning has been predominantly in the form of controlled research studies, to date, the most important empirical research on multiple intelligences has taken the form of case studies. In their recent publication, Multiple Intelligences and Student Achievement: Success Stories from Six Schools, Linda Campbell and Bruce Campbell (1999) summarize the results of using different approaches to implementing the theory of multiple intelligences. They examine six schools, two elementary, two middle, and two high schools. Some

School	Pre MI	Post MI
Russell Elementary Lexington, Kentucky *65% minority* *94% free/reduced lunch*	30% on State Tests over 50% at novice	Test scores doubled; No students at novice level
Exposition School St. Paul, Minnesota *50% minority* *35% free/reduced lunch*	MI since inception	Students attending 3 or more years score 75th percentile on Metropolitan Achievement Tests
Skyview Junior High Bothell, Washington *10% minority* *10% free/reduced lunch*	MI since inception	8th graders score 20% higher than state and national peers on CTBS 60% higher on WASL reading; 82% on WASL math
KeyLearning Community Indianapolis, Indiana *50% minority* *44% free/reduced lunch*	MI since inception	Above grade level in all areas on state and national tests
Mountlake Terrace High Mountlake Terrace, Washington *25% minority* *13% free/reduced lunch*	Below district averages	Above district averages; One of schools in state with pronounced improvement over 5 years; highest of all schools in district; SAT verbal rises 16% in last two years, SAT math rises 9%
Lincoln High School Stockton, CA *50% minority* *26% free/reduced lunch* *13% LEP*	Served different student population using traditional lectures, texts & worksheets; Students bored	Students engaged with MI projects in all classes; Standford Test of Academic Skills: highest scores in county; 90% go on to college; Outperform district and state peers on SAT and ACT; Graduation rates 97% compared to state norm of 87%

Perhaps the most remarkable aspect of the case studies described by Campbell and Campbell is that the primary reason schools in the study adopted MI was their desire to educate the whole student; the dramatic achievement gains which resulted were a by-product of the shift in philosophy. Teaching to the text is self-defeating; it does not produce meaningful gains and alienates students. Gains, as the MI school demonstrates, are obtained not by teaching to the test, but by broadening the curriculum and making it more meaningful.

The experience of MI schools points out the narrowness of defining achievement only in terms of academic achievement tests. The schools adopting MI produced a host of achievements which are not measured by narrow academic achievement tests, including,

- raised expectations among teachers and students
- increased respect of teachers toward students and students toward each other
- increased staff collaboration, peer review, self-determination, professionalism
- greater student engagement and liking for school and learning
- improved self-esteem, confidence, and positive risk-taking among students
- increased self-knowledge among students
- increased understanding of and respect for diversity increased involvement in global issues
- improved peer relations
- increased sense of belonging by students and staff
- improved student attendance
- increased community involvement including community projects and volunteer work
- development of musical, poetic, and a range of other artistic skills among all students within regular classes
- increased range of enrichment classes
- increased physical fitness
- increased choice, responsibility, and self-direction among students
- increased personalization of the curriculum
- increased involvement in running and improving classrooms and the school
- responsibility for running businesses such as "The Poet's Cafe."
- student developed character education handbooks
- student run friendship clubs
- increased engagement of parents
- increased engagement of community experts and mentors
- increased range of ways to demonstrate learning including (audio tapes, videos, rubrics, exhibitions, portfolios, narratives, projects, presentations, role-playing, performances, interviews, tests, checklists, and self-evaluations)

Awards such as

- ★ highest ranked high school student newspaper in the nation
- ★ state and national debate club awards
- ★ first place at jazz festivals
- ★ technology education program of the year
- ★ recognition as one of Redbooks "America's Better High Schools"
- ★ recognition by various national television programs and newspapers.

At a time when a narrow focus on standardized test scores threatens to dim the vision of educators, MI schools provide a beacon. They help us ask not if an educational innovation raises test scores, but rather if it helps us become who we most want to be. The positive outcomes in MI schools are a result of far more than the adoption of MI learning strategies in classrooms; they result from a fundamental shift in perception of the role of teachers and schools. As schools and educators ask the broader question of how programs align with the vision of fully educating the nation's youth, they find the multiple intelligences structures one very useful set of tools in the process of helping teachers and students become all they can be.

Timed Pair Share, Leander, TX

Change Theory

Will Kagan Structures Pass the Test of Time?

Enduring change occurs when it is institutionalized—when it becomes the way we are. The Kagan Structures lend themselves to enduring change because once practiced on an ongoing basis, they become a stable part of each teacher's repertoire. Rather than planning cooperative learning or multiple intelligences lessons, the teacher simply uses a range of Kagan Structures as part of any lesson. The Kagan Structures are not a new program but rather a powerful set of tools used to more efficiently deliver any program (Kagan, Fall 2000). In the process of delivering any curriculum, if the teacher uses structures, the teacher aligns instruction with how students best learn, and delivers a second, embedded curriculum which includes social skills, multiple intelligences, character virtues, and emotional intelligence.

That the structures become part of any lesson is at the heart of institutionalizing structure-based change. Educational reform has been plagued by the "replacement cycle"—one educational reform replacing another. What fuels this replacement cycle is that reforms have been based on complex lesson designs. These complex lesson designs take a great deal of planning, special sequences of events, and often require special seating and materials. Once learned and implemented these lesson designs produce positive results. However, innovation in education is inevitable and when innovation does occur, the teacher find he/she does not have time to implement the old complex lesson plans and also implement the new innovation. Thus the old is shelved in favor of the new, and one innovation replaces another. The list is long of educational programs which have come and gone, replaced by new innovations.

In contrast, the Kagan Structures are simple so they are compatible with new innovations. Thus Kagan Structures do not need to be replaced when new innovation occurs. Kagan Structures are simple strategies that are easy to learn and implement, demand no expensive support materials, and produce sustained excitement and gains along many dimensions. Most importantly, they are compatible with new innovations. One of the most important rationales for Kagan Structures is that they break the replacement cycle. The structures are

very simple; many take only a few minutes to implement. Because of this they can be used even when a school or district shifts to a new staff development focus or a new curriculum. We are fond of saying that a teacher who learns a structure has acquired a tool for a lifetime—a tool that will be useful in delivering any new program or any new curriculum.

In Summary

In this article, I have provided some of the research and rationale for Kagan Structures. I firmly believe the structures are not just one more trick for boosting achievement and not just one more exciting passing fad among educators. They are a revolutionary approach to instruction which empowers any teacher to be successful at the awesome task of educating for democracy in the 21st century.

The ultimate test of the structures, though, is a test teachers must apply. Each teacher must try the structures for him/herself and then ask, "Are the structures helping me and my students become who we most want to be?" Teachers who are asking that question are answering with a resounding Yes!

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