A Brief History of Kagan Structures

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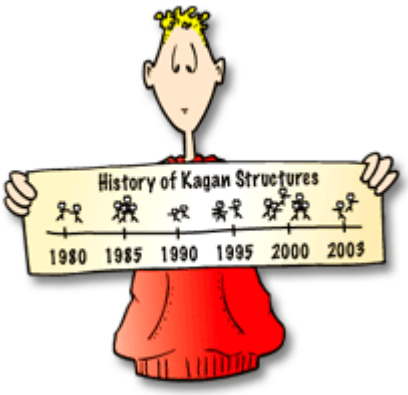
It is now 23 years, almost a quarter of a century, that I have been developing structures. We now directly train over 25,000 teachers a year in our workshops and in-services, and many times that number are learning about structures through our presentations at conventions, publications, and the work of others. Our books are being translated into numerous languages. Training companies in various parts of the world have arranged agreements with us to train teachers in **Kagan Structures**. Teachers worldwide use **Kagan Structures** on a daily basis in their classrooms. Thus it may be time to collect a few thoughts on the history of structures.

Origins: Kagan Structures

The first work in developing **Kagan Structures** sprang from years of experimentation with children from many parts of the world. Before turning to applied work in classrooms, I had done basic research on the social motives and social interaction of children. Years of research revealed that **the single most powerful determinant of the cooperativeness of children is the situations in which they are placed.** All people can be made to be extremely cooperative or extremely competitive, depending on the type of situations they are in. My research had revealed that regardless of nationality, race, culture, and childrearing practices all students became dramatically more cooperative in certain kinds of situations and dramatically more competitive in other types of situations.



It was a natural step to apply those findings to the classroom by designing situations that elicited cooperation among students. If teachers create the right kinds of situations for students, they foster a range of positive outcomes among students including cooperativeness. Thus the development of structures was rooted in situationism, a powerful approach to social psychology. The Kagan Structures are applied situationism — they apply to the classroom the finding that situations more than anything else determine social behavior.

The first structures I taught teachers had their roots in experimental research methodology. As a graduate student at UCLA, I worked under the guidance of Millard Madsen. Dr. Madsen had developed a methodology of behavioral choice points to study very young children and children cross-culturally. Our research team developed a number of games to reveal the cooperativeness and competitiveness of children. By observing what children did when placed at behavioral choice points, we could side-step the problems inherent in translation of language and study the cooperativeness-competitiveness of very young children, even before the emergence of fluent language. As a professor I continued researching cooperativeness-competitiveness and other social behaviors by developing novel games. When I began to apply the work to classrooms, some of the experimental games were easily adapted for instruction.

For example, in many of our research studies we had used variations of **RoundRobin** and **RoundTable**: students in small groups taking turns contributing. The same structure worked well to equalize participation in cooperative learning teams. If students in small groups discuss a topic with no interaction rules, in an unstructured way, often one or two students dominate the interaction. If, however, students are told they must take turns as they speak, more equal participation is ensured. **RoundRobin** is a simple, time-honored way of structuring interaction. **RoundTable** is a natural extension — each student in turn writing something on a common piece of paper.

Another structure I had developed for research purposes moved naturally into the classroom. In one experimental task to measure the impact on participation of children, I had made a rule that each time a student talked, he/she had to relinquish one of a limited supply of tokens. Adapted for classroom work the technique worked well to equalize participation within cooperative learning teams. Given a limited supply of tokens, students think before speaking, are more aware of how much they are dominating the conversation, participate more equally, and focus more intently on the speaker. I called the strategy **Talking Chips**.

Why Did We Give Structures Special Names?

The strategies I was developing were unique. Other cooperative learning trainers emphasized providing teachers with activities they could do in their classroom. For an hour of training the teacher learned an activity that would last an hour in the classroom, an activity the teacher would "use up." I wanted to provide something more enduring. So I emphasized developing and sharing strategies that could be used over and over with different content.

Because I wanted teachers and students to learn and remember the strategies and to use them often with academic content, I gave them unique, catchy names. **"Numbered Heads Together"** is far more descriptive and easier to remember than something like "Teammates Consult Prior to Individual Accountability." Giving the strategies catchy names was useful because it distinguished the strategies from each other and from one-time cooperative activities,

I have been asked why I named the oral turn taking structure **"RoundRobin"** rather than "round robin." If you turn to the dictionary, you find several definitions of round robin. They don't exactly fit what we are doing to structure student interaction in classrooms. I wanted crisp definitions of the structures so when a teacher called for a **RoundRobin** the students would know exactly what to do. For example, a **RoundRobin** refers to taking turns orally, whereas a **RoundTable** refers to each in turn contributing non-verbally as when each adds something to a paper or project passed around the table. **RallyRobin** refers to taking turns orally in a pair; **RallyTable** refers to taking turns contributing non-verbally in a pair.

RoundRobin v. round robin

RoundRobin

A turn-taking structure: Each member of a team, in turn, shares orally with the group.

— Kagan Structures for Success™

round robin

1. Sports. A tournament in which each contestant is matched in turn against every other contestant.
2. A petition or protest on which the signatures are arranged in a circle in order to conceal the order of signing.
3. A letter sent among members of a group, often with comments added by each person in turn.

— American Heritage Dictionary

Giving the structures distinct names has a number of advantages:

1. Students **know exactly what to do** when the teacher says "Do a **RoundRobin**" or "Turn to your face partner and **RallyTable** possible explanations for...."
2. The structures are **easier to remember** for teachers and students.
3. The structure names **facilitate communication** among teachers. It is far more descriptive to say, "I had the students **RallyRobin** prime numbers" than it is to say, "I had the students do cooperative learning during math." When a teacher says "I did a **RoundRobin** naming events from the chapter," we know just what happened in the classroom.
4. The structures become **a quantifiable curriculum** for teachers. When I say to a teacher, "Do you know the steps of "**Circle the Sage**," the answer is either yes or no; a teacher knows immediately if he/she has mastered that instructional strategy.

How They Came to be Called "Structures"

The strategies I was developing were like rules of a game. They feel natural to students in part because students are familiar with board games with their various rules. For students, **structures are like games, easy-to-learn and easy-to-play.** Whenever teachers use them, however, they make a profound difference in the way students participate, how they interact, how they treat each other, and how much they learn. As I developed more of these strategies I realized I was developing a fresh approach to teaching. We needed a name for these powerful new strategies.

I had been teaching teachers these simple interaction sequences for several years before I came up with the word "structures." The methods I was teaching were instructional strategies, but the term "strategies" did not distinguish the methods from the many reading, writing, and math strategies teachers had used for years. These strategies were different. They were not ways to better deliver specific content; they were **ways to shape student interaction over any content.**

I remember the moment I came up with the word "structures." I was sitting at my computer, writing. I wanted a word that communicated that these strategies were not tied to any specific content, that they were content-free. **RoundRobin** could be used to help teach reading, writing, or any other curriculum content. The word "structure" came to mind — probably because one of my first jobs had been as an ironworker. I remembered how as steelworkers we would put up a structure, and then later the cement workers, carpenters, plumbers, and electricians would come in after us to put in their content. The steel structures I built with my fellow ironworkers could hold anything. New plumbing or electrical outlets could be put into our structures, but the underlying structure stood. The analogy held: Once a

teacher had a structure, the teacher could put reading content into the structure, or math content, or science or history. Regardless of the content, the underlying structure remained the same.

I liked the word "structure" for a second reason. It conveyed the idea that through a simple sequence of steps we could structure the interaction of students toward specific outcomes. Prior to the concept of structures it was generally assumed that all you had to do to get students to be productive in groups was to give them an interesting problem. As I observed groups working on problems it was clear that often one or two of the students would do most or even all of the work. Teachers wanted and hoped for equal participation, but they were not structuring for that outcome. They were allowing the students to interact any way they wanted. Unstructured interaction in a group, especially a heterogeneous group, almost always leads to unequal participation. If we want to have more equal participation and learning, we need to structure the interaction among teammates. For example, if we structure the interaction of students so each teammate in turn contributes an idea, more equal participation is ensured. This **RoundRobin** structure dramatically alters the participation and learning among students compared to unstructured group discussion. Structures allow us to create desired outcomes. Or, put another way, **we structure for the outcomes we desire.**

The Road to Acceptance: Bumpy

In those early days of cooperative learning, not everyone was as excited about structures as I was. Different trainers had different notions regarding the essence of cooperative learning. I was elected the first president of **CACIE**, the **California Association for Cooperation in Education**. The organization consisted of educators developing, training, and implementing cooperative learning. To create greater understanding and unity among the leaders of that group, I called for a retreat at which each person would share a bit of the work they were doing. When it was my turn, I chose to share **RoundTable**, a simple structure in which a paper was passed around the table of teammates, each person in turn adding an answer or idea to the paper. My goal was to convey the idea of structures — these content-free interaction sequences I was developing and training. I wanted to first do a **RoundTable** with some math content (write down two numbers that sum to 21) and then planned to move to language arts (write down adjectives that describe our President). To my surprise, I did not get to complete my lesson. After a few rounds of writing sums, one of the cooperative learning trainers jumped up and angrily declared, "This is not cooperative learning!" She refused to participate any further and her upset reaction put an unexpected end to the activity.

I was astonished. In the discussion of cooperative learning that ensued, it turned out that each of us had very different notions. My notion of cooperative learning was content-free: For me cooperative learning was simply working together to learn together. For the participant that refused to do **RoundTable**, the essence of cooperative learning was giving problems to groups and letting them interact to construct meaning. For her, if there was a right/wrong answer or too much structure, it was not cooperative learning!

Although I could not convince some of the early leaders in cooperative learning that the idea of structures was important or even positive, the response of almost all teachers was extremely favorable. Before structures, teachers were struggling with complex lesson designs. They were trying to convert traditional lessons into cooperative learning lessons by re-writing their lessons to incorporate essential elements of cooperative learning like positive interdependence, individual accountability, and face-to-face interaction. It was hard work to incorporate all the essential elements of cooperative learning in each lesson, and many teachers burned-out in the process. I visited many classrooms where cooperative learning had come and gone. The teachers reported it was simply too hard to spend their days teaching and their nights lesson planning. Whenever I shared the idea of structures, the enthusiasm of teachers was re-ignited. **Structures made it easy.**

I began telling teachers **"Don't do a cooperative learning lesson! With structures you can make cooperative learning part of any lesson."** Rather than replacing traditional lessons with cooperative learning lessons, our goal is to deliver content via structures. It is an integrated rather than replacement approach.

Different structures could be used to create a set or closure for a lesson, to generate higher-level thinking or mastery of high consensus content, to help students share information, or bond as a team or class. In our trainings and in my writings I emphasized the concept of "Domains of Usefulness," that different structures had different functions. For example, when students did an **Inside/Outside Circle**, regardless of the content (they could rotate to share personal experiences, or to practice spelling words) they were interacting with others in the class as a whole, getting to know and like their classmates. I coined the term **"Classbuilding"** to capture the idea that certain structures had a positive impact on the class as a whole.

The work on structures led to a string of publications. The most comprehensive book on structures was simply titled **Cooperative Learning** *1*. That publication was followed by books on structures for **Classbuilding** *2*, **Teambuilding** *3*, **Higher-Level Thinking** *4*, as well as specialty books on how to use structures in the primary grades *5, 6*, and in all of the content areas *7*. Recently our work has

extended to the use of structures to reach the standards in all content areas *8, 9, 10, 11*, as well as books for specific high school content areas *12, 13, 14, 15*.

My belief in the power of structures has been sustained over the years by watching the reactions of students and teachers when structures are used. My initial persistence in developing structures was vindicated in another way a number of years ago during a chance meeting in an elevator at a national conference. As I was getting out of the elevator, the person about to enter was none other than the cooperative learning trainer who initially had such a strong hostile reaction when I first introduced the concept of structures. She stopped me to describe the very positive reaction from participants she received in her workshops when she trained structures!

How Different Structures Were Developed

As the work with structures progressed, my co-workers and I developed more and more structures. There were benefits in creating new structures: Different structures were good for different purposes plus teachers and students love variety. **To date we have developed over 160 distinct structures.** Different structures were developed in different ways.

The first structures, as I have indicated, were adaptations from basic research. Others were adapted from watching what excellent teachers did. Some were teacher-created. Some were derivations from basic principles. Others were developed spontaneously as I taught workshops. Yet others appeared, literally, in a dream! Most have been tweaked and modified over the years, as we have discovered more efficient and powerful ways to have students interact.

Video Analysis: Numbered Heads Together. At the time I was coining the word "structures" to describe the simple content-free instructional strategies I was developing. I was analyzing what worked and what did not work as we trained teachers and student teachers. Roger Skinner, the principal at Chapparal Middle School in Diamond Bar California had graciously opened up his school for me to study. I had trained his teachers in some cooperative learning methods and was visiting classes to observe what teachers were doing.

Roger said to me, "You have to see the classroom of Russ Frank. Russ is a madman. I don't know what he is doing, but the kids love him and they are learning." Sylvia Andreatta and I went to Russ'

class. Sylvia was taking videos so we could analyze what we were observing and share it with student teachers. When we entered Russ' class, it was like no other class we had ever seen. Students were seated in teams and Russ was at the overhead, teaching a language arts lesson. Russ would project a sentence on the overhead and ask a question about the sentence. There would be an animated buzz of interaction within teams. Russ would then touch his ear and one student would jump up from each team. Russ would call on a student and if that student answered correctly the team would earn a point. Russ had a frenetic pace and had all sorts of signals, and if one team missed, another could challenge. The classroom was controlled chaos and the students loved it. At the time I couldn't understand what was going on. All I could see was Russ giving all sorts of non-verbal signals to which the students responded, with kids jumping out of their chairs, yelling answers, earning points.

A few days later Sylvia said to me, "You have to look at the video of Russ' class! He really has something." As we ran and re-ran the video, it was clear to me that underlying the chaos in Russ' room was a structure. To make this structure something any teacher could do, my job was to adapt and transform the unique 'Russ-only language arts performance' into a content-free calm sequence of steps any teacher could use to better deliver any curriculum. Russ was asking a question, having the students interact, and then giving a signal to indicate which student in each team had a right to respond. If that student was the first to jump up, be called on, and respond correctly, the student earned a point for a team. If not, another team would have the opportunity to win the point. Later when I sat at my computer, I gave this simple sequence a name; I called it **Numbered Heads Together** to convey the idea that each student had a number and that all the students on the team put their heads together to come up with their best answer. **Numbered Heads Together** was one of the first cooperative learning structures I began training.

Teacher Innovation: Simultaneous Numbered Heads. As I trained teachers in **Numbered Heads Together**, they came up with variations and improvements. Becky Nehan of Coachella Unified School District developed a tremendous improvement for the structure by having more than one student at a time respond. Rather than calling on just one team, Becky would have a representative from each team go to the blackboard to write his/her answer, correct answers earning a point for their team. Becky's variation multiplied by eight the active participation among students and the number of students who were held accountable for giving an answer. I loved it. A teacher who had never met Russ was collaborating with him, building off his ideas to help develop methods that would benefit any teacher. I gave the name **"Simultaneous Numbered Heads Together"** to Becky's variation and in my training began pointing out the advantages of simultaneous response modes.

Soon teachers flooded me with additional ways students could respond when their number was called including slates, response cards, thumbs up/down. The structural approach was becoming richer and more varied. There were structures and variations on structures.

Applying Basic Principles: Improving Numbered Heads Together. My co-workers and I developed and modified many structures by simply applying four basic principles: **P**ositive Interdependence, **I**ndividual Accountability, **E**qual Participation, and **S**imultaneous Interaction (**PIES**). For example, recently we modified **Numbered Heads Together**, inserting a new step, individual write, after the teacher asks a question. Why did we insert a step? — To increase individual accountability. Without having to respond on his/her own, a student could get away without thinking about the answer at all, just waiting to be told the answer by teammates during the heads together time. Adding an individual write strengthens individual accountability. Over the years we have modified existing structures and created new structures to implement the **PIES** principles.

Two of the four **PIES** principles, Positive Interdependence and Individual Accountability are common to almost all approaches to cooperative learning. I developed the other two principles; they are unique to the Kagan approach. Whereas others call for "face-to-face" interaction, the Kagan approach calls for equal participation and simultaneous interaction. Implementing the **"E"** and **"S"** of **PIES** strengthens structures dramatically. Students can be "face-to-face" while one does most are even all the talking; asking "How Equal?" pushes us to design structures in which no student is left behind. "Face-to-face" does not inform us about the quality of a structure nearly as much as does Simultaneous Interaction. Simultaneous Interaction focuses us on exactly what percent of our class is overtly active at any one moment — it is a quantitative rather than just qualitative. Unlike "Face-to-face," the **"S"** of **PIES** informs us that pair work doubles the active engagement compared to square work and that with regard to increasing engagement, teams of four are better than teams of 5 or 6. Testing structures against the **PIES** principles elevates our endeavor — it gives us a yardstick with which to measure the quality of a structure.

Applying Basic Principles: Paired Heads Together. **Paired Heads Together** is a new structure I recommend over **Numbered Heads Together** for most learning tasks. I developed **Paired Heads Together** to apply a different basic principle — the simultaneity principle. In **Paired Heads Together** the teacher asks a question, students write their answer on their own, and then turn to their shoulder partner to share and discuss their answers. They then turn to their face partners to share their answer one on one. Why would I recommend **Paired Heads Together** over the tried and true **Numbered Heads Together**? Because applying the simultaneity principle reveals **Paired Heads Together**

doubles the overt active participation — twice as many students are sharing their answers at any one moment during the heads together time.

How Salt Melts Snow: Circle the Sage. Some structures have been created on the fly. On the way to the workshop I was giving in Maine we drove behind a truck salting the snowy roads. I was curious how salt melts snow, so I asked my workshop host who was driving. When I asked her, she was at a loss for an answer. During the workshop that day, without pre-thought, I asked the workshop participants, "How many of you know how salting the roads is a catalyst for the snow to melt?" About ten people raised their hands. I said, "Please stand up." I then asked for people to leave their teams and gather around the experts, each teammate from each team gathering around a different "sage." After the sages shared, I had the teammates return to their team to compare notes. We all got an unexpected bonus: There are two different ways to salt the roads, so when teammates compared notes, even many of the "experts" learned something they did not know. **Circle the Sage** is now used on a regular basis by many teachers to have students teach each other how to solve a problem or to share special information they have gathered.

Late for a Workshop: Sages Share. One structure came into existence through rather inglorious means. I got caught in traffic one morning driving to a workshop in Los Angeles. It was about the tenth meeting of a yearlong training for trainers. In spite of having left in plenty of time to set up the workshop, I arrived after all the participants because of the traffic, just in time to stand in front of them to start the workshop. Without a thought about what I was about to do, I asked the participants to each take out about eight or so small slips of paper. I then asked them to do a **RoundRobin** each naming structures they had tried with students or trainees, writing the name of the structure on a slip of paper and placing the paper in the center of the table. After a number of rounds, the tables were full of slips of paper with structure names. I then asked each person to initial all the structures they had tried. Next, I had the teammates do a **RoundRobin** each in turn asking questions about a structure they had not initialed, with those who had initialed them, the "Sages," answering.

Although I had initiated the structure as filler to keep the participants occupied while I unpacked my briefcase, the structure worked so well, it became an integral part of our trainings. **Sages Share** is good for recall and review of information from a chapter, procedures from a lab, or vocabulary definitions. It can be used also by having the homework problems each on a separate slip of paper, so those who get the problem right can initial the slip and become sages to share with the others.

A Dream: Stir The Class. Some structures have literally appeared as dreams. When you think structures all day your mind does not stop thinking structures while you sleep! One morning I woke with a clear picture of students in a classroom standing in teams around the class. The teacher asked a question. The students put their heads together to formulate their best response. The teacher then called a student number and how many teams to rotate: *"Student three, rotate two teams clockwise."* The student with that number in each team responded and then shared her/his answer with the new group, receiving praise.

I was excited about the structure because it combined mastery, movement, and classbuilding. In fact, I was so excited I wanted to try it with students right away. Unfortunately, I was committed to being at home for the next four days. So I did the next best thing. I called my wife Laurie who was in North Carolina training teachers. I described the structure to her and asked her to share it with the teachers she was working with. Four days later when I flew from California to North Carolina, Laurie and four teachers met me at the airport. They had all tried the structure and had glowing reports of how much their students enjoyed it and how well it worked to promote mastery. In fact, they had put their heads together to give the structure its name: **Stir the Class**.

A Discovery: There is Always A Structure

After developing and training teachers in structures for a few years, I made a discovery that deepened my understanding of the power of structures and changed my conceptualization of what we, as teachers, are doing and what skillful teaching is. I realized **at every moment in the classroom, there is always a structure!**

If a teacher lectures, that is one way to structure the interaction in the classroom. If the teacher calls on one student to respond to a question, that is a different way to structure the interaction in the classroom. If instead, the teacher says to a group, "Talk it over as a group," that is a different way to structure. If the teacher says, "Do a **RoundRobin** in your group," that is yet another way. Because each of these ways to structure the interaction in the class has different consequences for academic and non-academic outcomes, the question at any one moment becomes, "Have I chosen the best structure to reach my objectives?" Skillful teaching includes knowing a range of structures and when to use each.

A key concept in the work with structures was to distinguish three general approaches to structuring classrooms, what we call Teacher A, Teacher B, and Teacher C. Teacher A is the traditional teacher

who asks a question of the class, calls on a student, and responds to the student's answer. In Teacher A's classroom, there is no interaction among students. Teacher B, rather than calling on one student at a time gets far more active engagement by using teams and saying, "Talk it over in your teams." Teacher B has students interact, but it is unstructured interaction. Anyone in the group can talk as much or little as they want. We call this group work. In contrast, Teacher C uses **Kagan Structures** to carefully structure the interaction of students in the group, to maximize positive outcomes. **Kagan Structures** are carefully designed to, among other things, equalize participation.

Thus, in the classroom of Teacher A, many students seldom or never raise their hands, leading to unequal participation and unequal learning gains. In the classroom of Teacher B, more students participate because participation is occurring in small groups, but there are still some students who can choose not to participate, allowing their teammates to do most or all the talking. In Classroom C, all students participate because the **Kagan Structures** are designed to equalize participation, ensuring more equal educational outcomes. Built into the **Kagan Structures** are **four basic principles that increase and equal positive outcomes:** **Positive Interdependence, Individual Accountability, Equal Participation, and Simultaneous Interaction.**

Redefining Activities and Lessons

A structure is content-free. A teacher puts her/his content into the structure to create an activity. For example, if I have students **RoundTable** writing descriptive adjectives for a political character as part of an integrated social studies/language arts lesson, that is one activity. If I have them **RoundTable** alternative ways to present data as part of an integrated science/math lesson, that is a different activity. **Each structure can be used to generate an infinite number of activities.** Thus the basic formula in the Kagan approach is:

Content + Structure = Activity

To deliver content we use a structure and which structure we choose determines, to a great extent, not only how well the content will be retained, but also a host of other outcomes.

Given this basic formula, we began to develop a new concept of a lesson. If content plus a structure is an activity, then a lesson is merely a series of activities. **A good lesson is a series of activities carefully sequenced to reach an important educational objective.** Some of the early work with structures was designed

to show teachers how they could reach their objectives through a sequence of structures. We called these lessons Multi-Structural Lessons. Two of our early publications were books of multi-structural lessons for mathematics [16] and language arts [17].

The Big Leap: Beyond Cooperative Learning

For many years as I worked to develop structures, I thought **Kagan Structures** were simply an approach to cooperative learning. To that point in the development of structures I had defined a structure as "a content-free sequence of steps designed to structure the interaction of students with each other." It never occurred to me that with the concept of structures I had stumbled onto something much bigger than cooperative learning, something that could extend beyond structuring the interaction of students with each other. The breakthrough occurred when I began to apply the **Kagan Structures** to implement multiple intelligences theory.

Multiple Intelligences Lessons. I watched with interest as educators attempted to implement the theory of multiple intelligences. What I saw was a lesson-based approach, similar to what was used when educators first attempted to implement cooperative learning. Depending on the trainer, the multiple intelligences lessons took different forms. Some trainers emphasized the use of learning centers so students would rotate through a Mozart center, a Picasso center, a Tiger Woods center, etc. Others emphasized MI lessons or theme units. Yet others emphasized assessing students and attempting to teach each student the academic curriculum through that student's strongest intelligences, creating a "clear window onto the curriculum."

Multiple Intelligences Structures. As I watched the early implementation of multiple intelligences theory, I realized that no matter how great the multiple intelligences lessons were, they were feeding the replacement cycle. If the implementation of **Multiple Intelligences Theory** was dependent on complex multiple intelligences lessons, regardless of how powerful those lessons were, this too would pass. Why? Educational innovation is inevitable and when the next new innovation was to come, it would replace Multiple Intelligences. A teacher simply does not have time to rotate the student through the MI learning centers and change the content of those centers on a regular basis and also implement next year's new thing. A great innovation would be set aside. Tragic. Tragic for students.

Tragic, too, for teachers who once again would be told to set aside an innovation they had labored to implement.

It was then that I asked, "Couldn't we do for multiple intelligences what we had done so successfully for cooperative learning? Couldn't we apply the structural approach so that, rather than planning complex multiple intelligences lessons, a teacher could make multiple intelligences part of any lesson?"

The result was a large book, ***Multiple Intelligences,*** I co-authored with my son Miguel Kagan [18]. We identified and created dozens of MI structures, structures to engage each of the intelligences as part of any lesson. Some structures engaged many intelligences; others only a few or primarily just one. When teachers use a range of multiple intelligences structures, they make their curriculum more accessible and enjoyable for the range of learners and in the process engage and develop the range of intelligences. We began to tell teachers, "Don't do MI lessons, make MI part of every lesson."

After a number of years of successfully developing and implementing **Kagan Structures** for multiple intelligences, I realized the work had redefined structures. Prior to that work I was happy to define structures as ways to structure the interaction of students with each other. But many of the multiple intelligences structures we had developed and teachers were using successfully had no interaction between students. To engage the intrapersonal intelligences, for example, we had structures like **Journal Reflections**, and **Guided Imagery** that had no social interaction component. A new, broader definition of structures had emerged: A structure is a content-free sequence of steps designed to structure the interaction of students with each other *and/or the curriculum*.

Structures for Everything: The Embedded Curriculum. Having broken the set that structures were simply cooperative learning methods, I realized **they could be applied to almost any educational innovation.** For example, rather than teaching lessons on character, we could make character education part of any lesson by using structures that developed honesty, caring, citizenship, or any of the other character virtues.

Similarly, instead of teaching separate higher-level thinking lessons, higher-level thinking can be made part of any lesson by using **Kagan Structures** for higher-level thinking. Rather than redesigning lessons or creating new lessons to make our instruction brain-based, we can align any lesson with the principles of brain-based instruction by using **Kagan Structures** for brain-friendly instruction.

The structures deliver an embedded curriculum. By choosing structures carefully **teachers can foster character, cooperativeness, multiple intelligences, higher-level thinking, and just about any other positive educational outcome.** For example, if a teacher has students practice their math problems using **Boss/Secretary**, the students learn their math well, but at the same time, they learn to be responsible, caring, and patient; hone their communication skills; engage the interpersonal intelligence; and learn to take the role of the other. When students do **Find My Rule** they develop their interpersonal skills while developing their inductive reasoning skills. Each structure delivers an embedded curriculum. By using a range of structures a teacher produces a range of positive outcomes without losing time from academics.

In the last few years, following this line of reasoning we have been busy developing structures that, with no time off academics, target and develop:

- The eight intelligences of **Multiple Intelligences Theory**
- The fifteen most important **Character Virtues**
- The fifteen most important **Thinking Skills**
- The five dimensions of **Emotional Intelligence**
- The five most important **Memory Systems** identified by brain research
- **Language acquisition** for students at all stages of language development

Another Discovery: Instruction and Curriculum are Inseparable

There has been a long-standing distinction in education between curriculum and instruction. Curriculum is what we teach; instruction is how we teach it. People are hired in schools and districts as a specialist in either curriculum or in instruction. Historically, the emphasis has been on curriculum. Interestingly, although the largest educational association in the world is called the Association for Curriculum and Supervision, when you go to the meetings of ASCD, you find more presentations on instruction than on curriculum. What is going on? There has been an historical shift to increasingly recognize the importance of instruction. The name of ASCD leaves instruction out because it was created before that shift had occurred.

The work we have been doing with structures led us to discover that the distinction between curriculum and instruction is a false distinction! In our basic formula curriculum is represented as "Content" and instruction is represented by "Structure," but every time we change the structure, we change not just **how** content is delivered but **what** content is delivered. **Structures contain an embedded curriculum — arguably the most important curriculum!**

For example, if students are learning about World War I, we can have them work alone from their text to master the facts. Alternatively, we can have students use any number of **Kagan Structures**. For example, if the students use **Debate**, they not only retain more facts, they learn also to prepare oral arguments, take the role of the other, detect fallacies, analyze and sequence an argument, listen with respect. In addition they acquire teamwork skills, responsibility, and respect, among other things. What is learned is a function not just of the content studied but how it is studied. If we choose a different **Kagan Structure**, very different skills are acquired. **A different curriculum is delivered with each structure.** Because there is an embedded curriculum within each structure and we always have to choose some structure, curriculum and instruction are inseparable.

With a fast-changing knowledge base and greater emphasis on thinking skills and teamwork skills, the curriculum embedded in structures is actually more important than the traditional curriculum. After all, what will serve a student more throughout her/his lifetime? — Knowing one more fact about a past war, or knowing better how to work with others and how to assume, present, and defend a point of view?

The Big Advantage: Breaking the Replacement Cycle

Structures foster character virtues, emotional intelligence, multiple intelligences, and thinking skills as part of any lesson. To deliver these important facets of curriculum, teachers do not have to plan new or different lessons; they just deliver their lessons using structures. This feature of structures, the ability to deliver an embedded curriculum through the way we teach, has tremendous implications.

The most important feature of structures is that they break the replacement cycle. Because the structures are not a new content to teach but rather a better way to teach anything, they do not get dropped when a school or district adopts a new initiative. Instead of adopting a new character education program to be used for a few years before it is replaced by some new innovation, character education is taught on a daily basis through the structures a teacher uses. And because the structures become a stable part of the teacher's repertoire, they are not abandoned when a new initiative is adopted. If character

education is embedded in the way teachers teach, we have character education in all grades, for all years. We cannot transform for the better the character of the nation if after two or three years we abandon character education in favor of next year's new thing.

Similarly, we cannot engage and develop all of the intelligences of students to their capacity if after two or three years of work on multiple intelligences we move on to the next educational innovation. The development of thinking skills, too, is a life-long process, not to be relegated to a few years of a school or district push. All of the wonderful innovations in education will not add up if they come and go. Structures do not come and go. Once learned, **structures become the way a teacher teaches for a lifetime.** New structures do not replace old structures — they are additional tools for the teacher, each additionally enriching outcomes for students.

In the early days of training cooperative learning, when I trained teachers in cooperative learning lessons rather than in structures, initial enthusiasm was high, but when I would check back on the teacher later, I would find little cooperative learning being implemented. "Oh, you should have been here Wednesday, we did our cooperative learning lesson on Wednesday." Or, worse yet, if I came back a few years later, I would hear "Oh, you should have been here last year. We were into cooperative learning. Now we have moved on. Now we are doing brain-based learning (or character education, or multiple intelligences, or higher-level thinking, or differentiated instruction, or....")

This pattern of dropping one positive educational innovation for another is not unique to cooperative learning. **Education is plagued by the replacement cycle.** Year after year schools or districts drop one powerful positive program in favor of another. Educational programs have a short half-life. As a result, teachers become cynical, hesitant to invest too much in any new program, knowing "This too will pass."

The reason for the replacement cycle is lesson-based innovation. If teachers are trained to do a type of complex lesson to implement a new school or district innovation, even if that lesson works very well, they will eventually stop doing that type of lesson because when the next innovation comes along, there is no way to do two different types of complex lessons at once.

The beauty of structures, an unanticipated benefit, is that they break the replacement cycle. Instead of doing complex cooperative learning lessons, **through structures teachers make cooperative learning part of any lesson.** So when the next educational innovation comes along, teachers continue to do cooperative

learning. Cooperative learning lessons feed the replacement cycle; cooperative learning structures break the replacement cycle — they are an integrated approach, not a replacement approach.

What's Just Down the Road?

What's around the corner in our work with structures? We are in progress with a number of advances in our development of structures, including:

Structures for Administrators. This summer we will release a new publication, the culmination of years of work. The publication, *Cooperative Meetings* [19], is written for school administrators. It, navigates a step-by-step course toward creating a community of leaders and learners. How do we transform individual teachers into a cohesive community? *Cooperative Meetings* charts how to use cooperative structures in faculty meetings to build stronger relations, improve staff development, and make collaborative decisions. **The Co-op Meetings structures have been proven through years of extensive field-testing.**

Kagan Coaching. Laurie Kagan has developed a coaching model for administrators helping their staff implement structures. The model, *Kagan Coaching*, involves giving teachers feedback in real time while teachers are teaching. After Laurie models Kagan Coaching for an administrator, she steps back and coaches the administrator as she/he steps into the role of Kagan Coach. To accompany *Kagan Coaching*, Laurie has developed structure-specific observation methods and forms. Her book, *Kagan Coaching*, is destined to be published before long. Just as a football coach would find it a mistake to wait until the game is over to give his players feedback, the administrators using in-the-moment coaching discover the traditional method of coaching — *after* the lesson — is too little and too late. Through *Kagan Coaching*, **teachers see immediate benefits from correct implementation of structures.**

Secondary Workshops. In the last few years, we have developed a number of content-specific books and workshops for secondary teachers. They love it. *"Finally a workshop just for me."* Although the structures can be used with any content, secondary teachers love their content and love to have workshops which focus on how to use the structures with their own specialty content. The success of these secondary books and workshop makes it easy to predict that we will be developing more secondary-specific resources as we travel the road ahead.

Structures for the Workplace. For a number of years we have given trainings to apply structures to the commercial world. Major corporations have sent their trainers to our institutes and we have gone out to corporations to give tailor-made trainings. Leaders from General Motors, Xerox, Saturn, Pacific Bell, Firestone Tires, and WalMart are among those we have trained in structures. Positive results include more efficient trainings and improved motivation, teamwork skills, and morale. Given the positive response of the business world to structures, soon we will be publishing a book, *Cooperative Learning for a Collaborative Workplace*. My crystal ball tells me it will be but the first of a number of publications on structures for the workplace.

Structure Sequences. As teachers become more familiar with structures, they begin to **create meaningful, repeatable sequences**. Just as the beginning instrumental music student first learns chords and then puts the chords together to play increasingly complex sequences, the teacher creates increasingly complex and meaningful learning experiences by combining and sequencing structures.

Simple structures are combined to make more complex structures: A **Three-Step Interview** is a **Timed Pair Interview** followed by a **RoundRobin**. **Mix-N-Match** begins with a **Stand Up**, **Hand Up**, **Pair Up**. **Timed Pair Share** and **RallyRobin** are steps within **Corners** and **Agree-Disagree Line-Ups**. For this reason we carefully sequence our trainings of structures, beginning with simpler structures and using them as building blocks toward more complex structures.

Certain structure sequences become habitual. For example, after I have students brainstorm ideas, it is natural to have them categorize, prioritize, or choose among the ideas. Therefore some of my favorite structure sequences include **Four S Brainstorming** followed by **Categorizing**, and **Jot Thought** followed by **Sum the Ranks**. It is natural to follow the production of a product with sharing. Thus **Team Mind Maps** is often followed by **Same Number Group Interview**.

Frank Lyman developed a frame that can be used to sequence structures, **Think-Pair-Share**. In his model, there are many ways to think, many ways to pair, and many ways to share, many of which are structures. Sequencing a way of thinking, a way of interacting in pairs, and a way of sharing, the teacher creates a structure or sequences several structures. For example, the teacher wanting students to reflect on the effects of bullying might choose the following sequence: **Think/Write**: Write some effects of bullying. **Tell/Repeat**: Students pair up and each tells his/her answers to a partner who repeats them. **Suggest:** Each pair generates a suggestion to end bullying. Because there are over a dozen ways to think, to pair, and to share, the **Think-Pair-Share** framework is a structure generator or structure sequencer.

As more teachers become more fluent in a range of structures, it will be natural for us to place greater emphasis on combining and sequencing structures to help teachers **create more meaningful learning experiences.**

Structures for Next Year's New Thing. Educational innovation is inevitable. We cannot predict what will be around the next bend in the road. We can predict, however, that **whatever next year's new vision is, structures will help us realize that vision.** How we teach on a daily basis and how we structure the interaction of students with each other and with the curriculum determines the most import outcomes of schooling.

Peeking Through the Telescope

If I try to look beyond the road just ahead, beyond the work in progress, I get more expansive. In a relatively short time we have come so very far in the development of structures. It gives me courage to dream.

When I allow myself to dream of where our work with structures will lead us, some thrilling images come to mind:

• Structures become used so frequently in all classrooms that the next generation of student-teachers find it as natural to use a wide range of structures in their classrooms as the past generation found it to rely almost exclusively on the traditional one-at-a-time question-answer and individual worksheet work structures

• Student teachers are trained in a wide range of structures during pre-service training so each is prepared to give their very first class using a range of structures to deliver a full range of educational experiences

• Schools all adopt some form of **SAM** club meetings — **Structure-A-Month** Club meetings—at which teachers work together as a community of learners, learning at least one new structure a month

• All students are fully engaged in every lesson in every class through a range of structures

• All schools show dramatic academic and social gains — like those we have proven occur for schools adopting structures

• All students learn to value the uniqueness and the contributions of every other student

• The wide-spread use of structures brings about a general transformation of social character — each

person approaches each other not as someone to best but as a valuable resource to know, understand, and team up with

We have seen dramatic improvements in race relations among students in desegregated classrooms and schools using structures. Is it too much to dream that one day, people of all nations will not see each other as "us" and "them" but rather as "we?" If on a daily basis we make that transformation in our classrooms, when we send our students out into the world, it cannot help but bring us closer to our shared goal of a peaceful and mutually supportive humanity.

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